VOL XXXVI. No.9 SEPTEMBER 1951

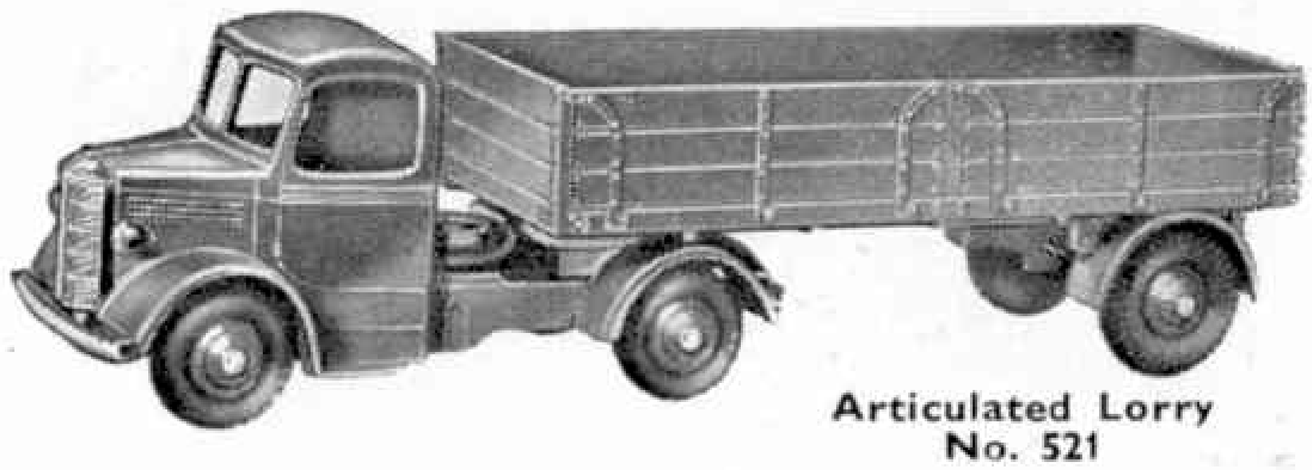
MECCANO MAGAZINE

LAUNCH OF THE "MONA'S ISLE"

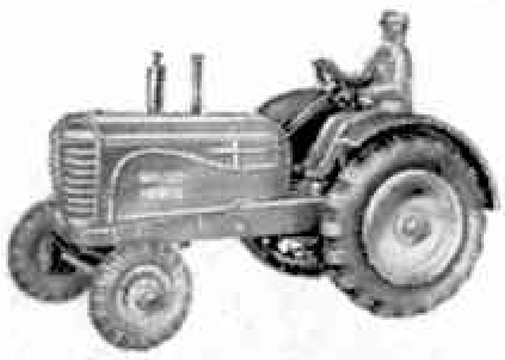
9D.

DINKY TOYS

Hudson
"Commodore" Sedan
No. 139b

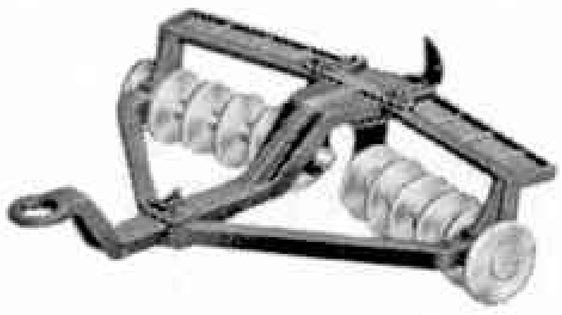


Articulated Lorry
No. 521



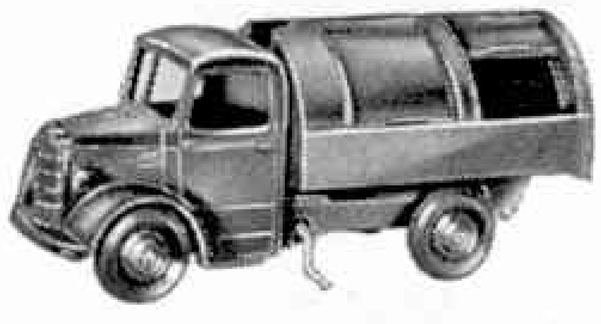
Massey-Harris Tractor
No. 27a

Harvest Trailer
No 27b



Disc-Harrow
No. 27h

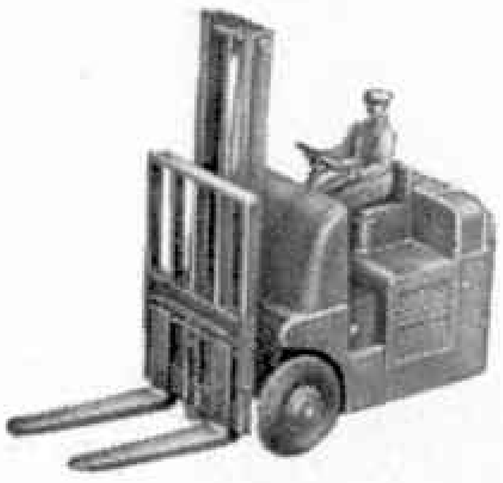
Ford "Fordor" Sedan
No. 139a



Refuse Wagon
No. 25v

Rover 75 Saloon
No. 140b

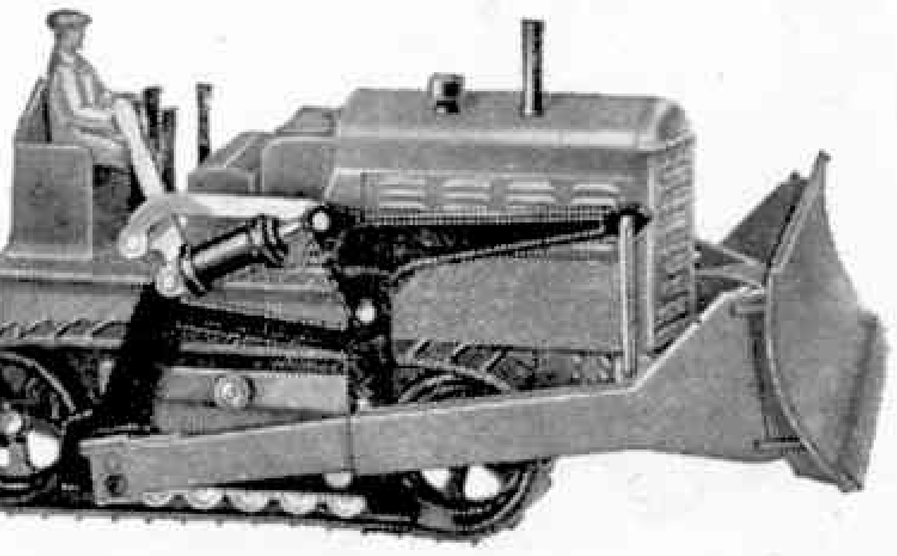
Electric Dairy Van
No. 30v



Coventry Climax Fork
Lift Truck, No. 14c

Austin 'Atlantic' Convertible
No. 140a

Coles Mobile Crane
No. 571



Blaw Knox Bulldozer
No. 561

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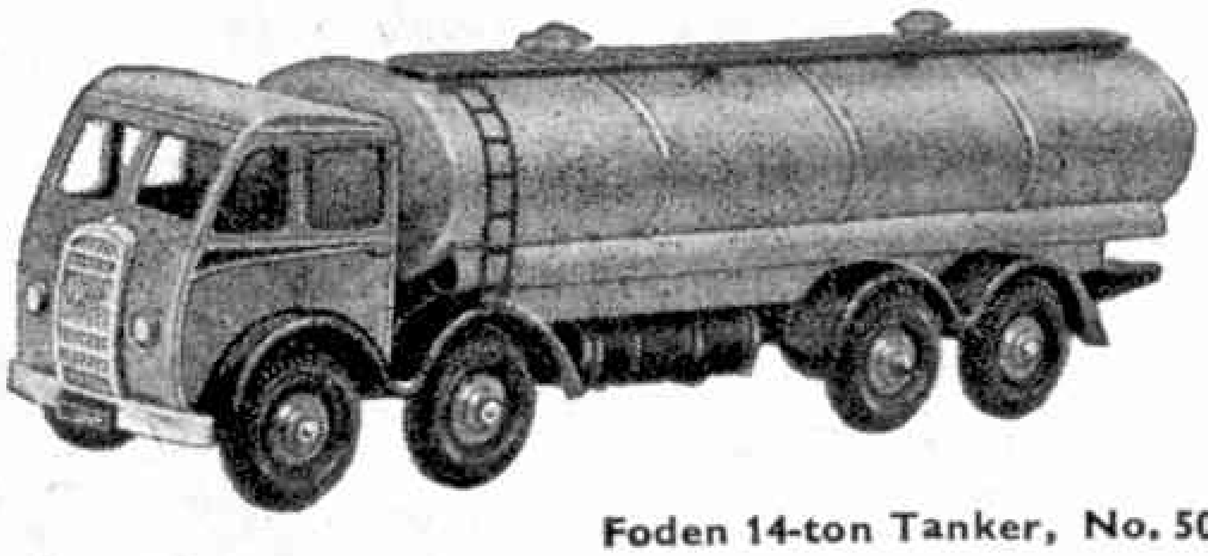
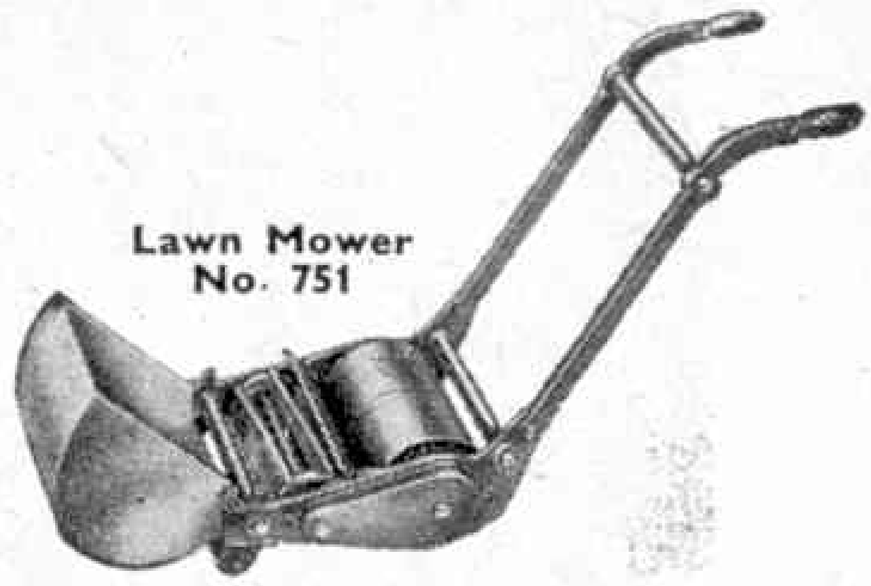
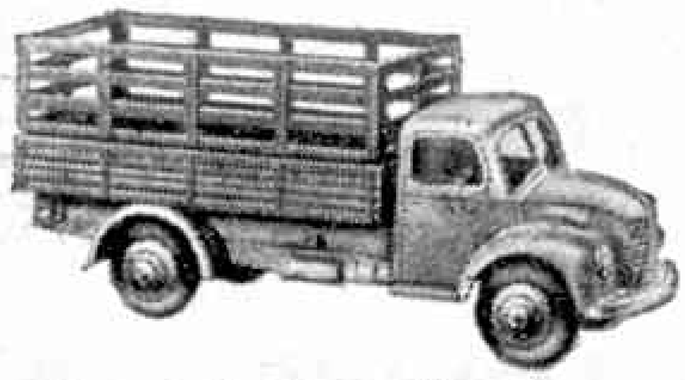
DINKY TOYS



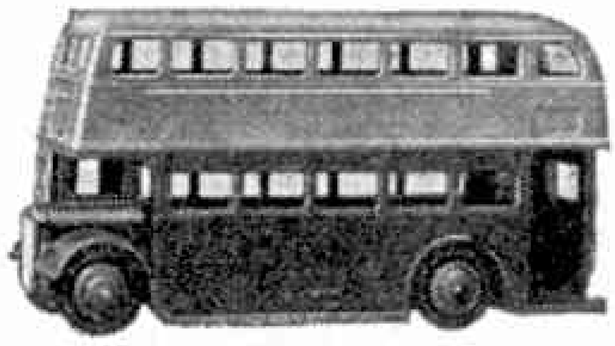
Foden 14-ton Tanker, No. 504



Lawn Mower
No. 751



Farm Produce Wagon
No. 30n



Double Deck Bus
No. 29c

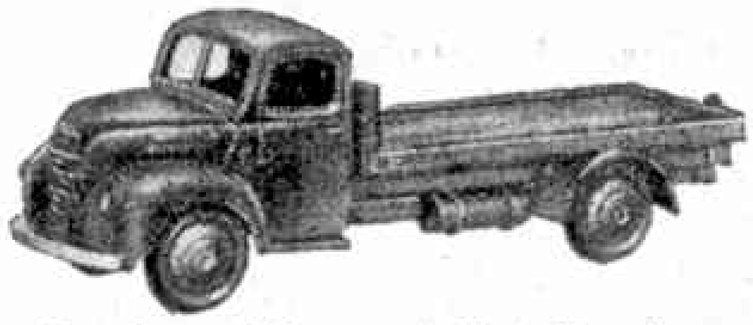
Austin Covered Wagon
No. 30s

The Standard "Vanguard"
Saloon, No. 40e

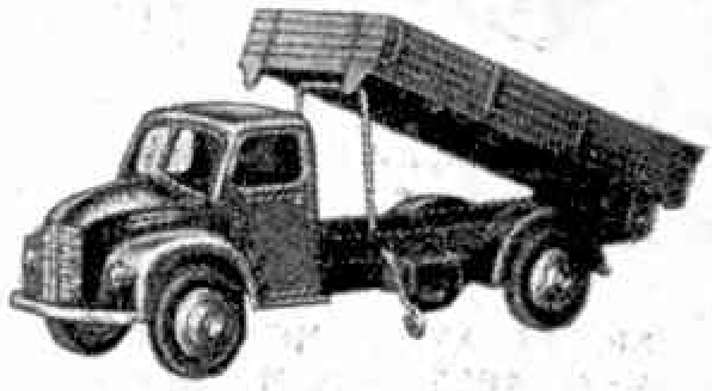
Land-Rover
No. 27d

Breakdown Lorry
No. 25x

Hillman Minx Saloon
No. 40f

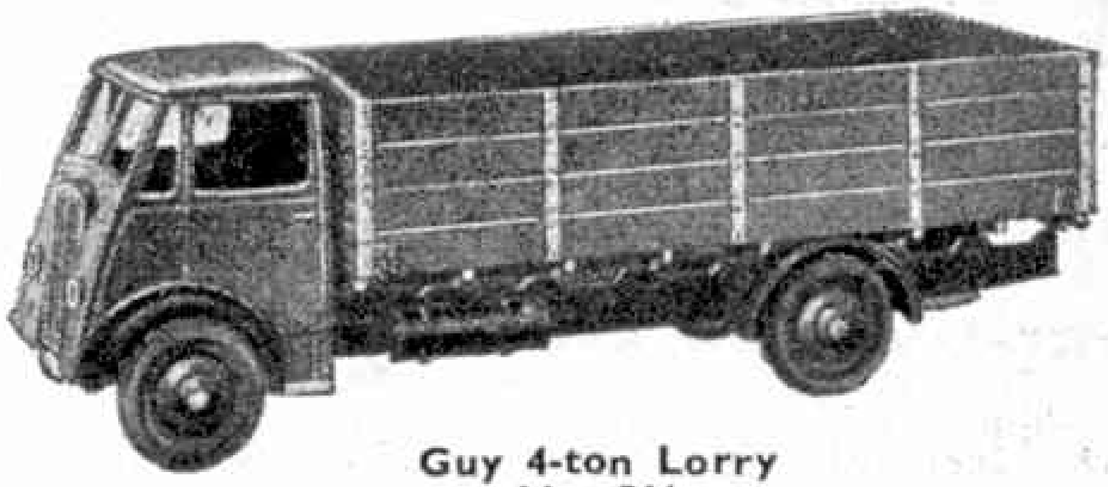


Fordson 'Thames' Flat Truck
No. 30r



Rear Tipping Wagon
No. 30m

Observation Coach
No. 29f



Guy 4-ton Lorry
No. 511

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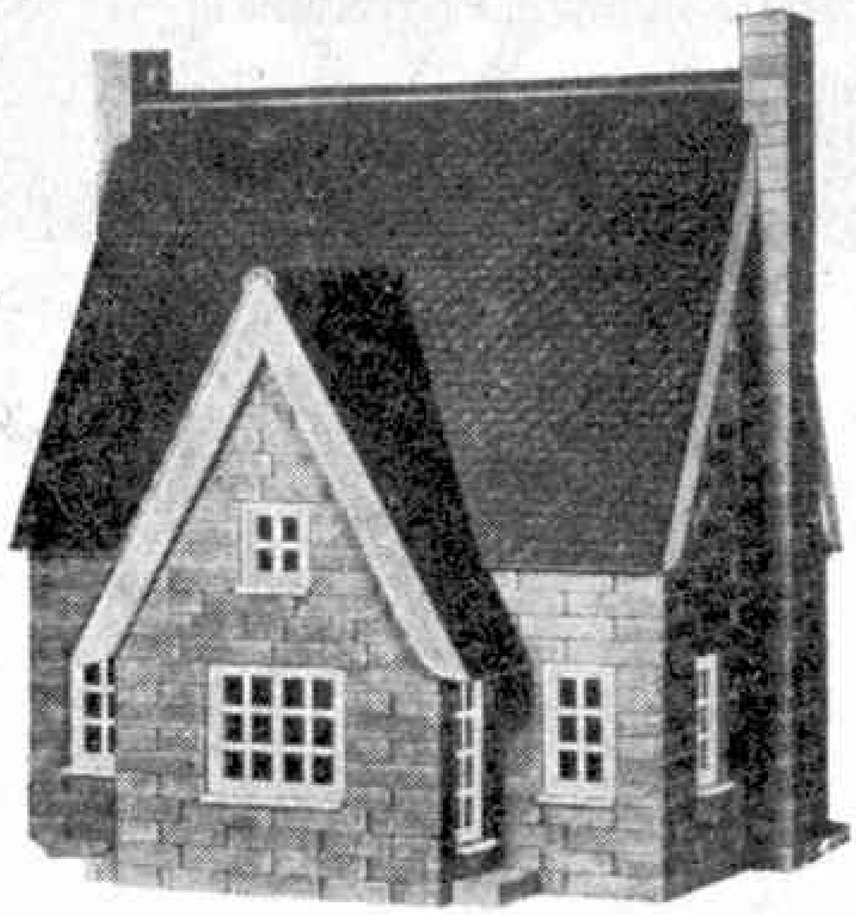

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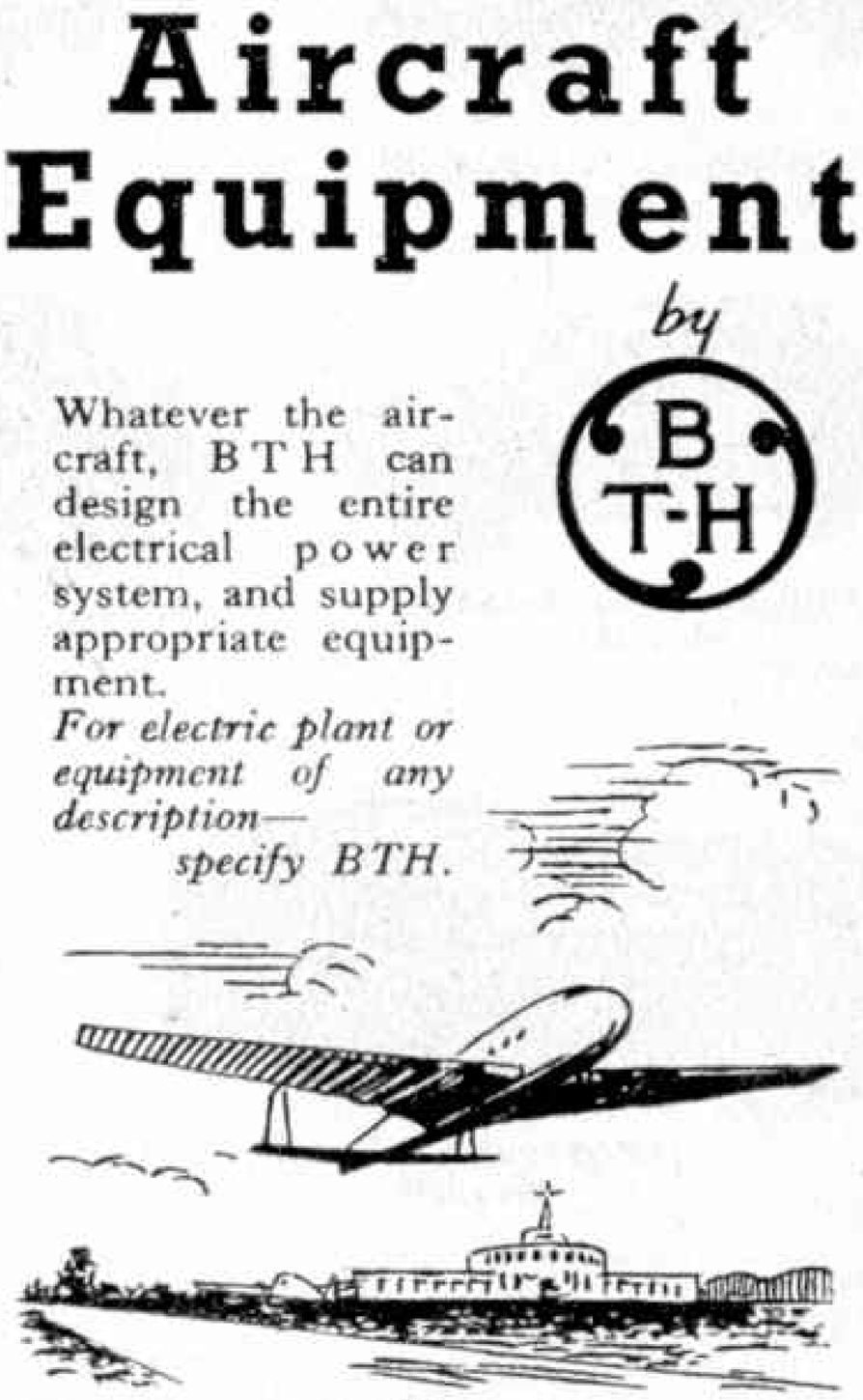

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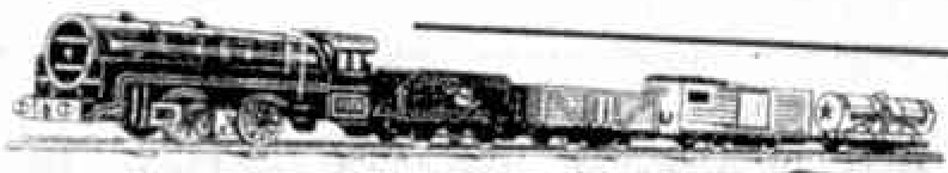

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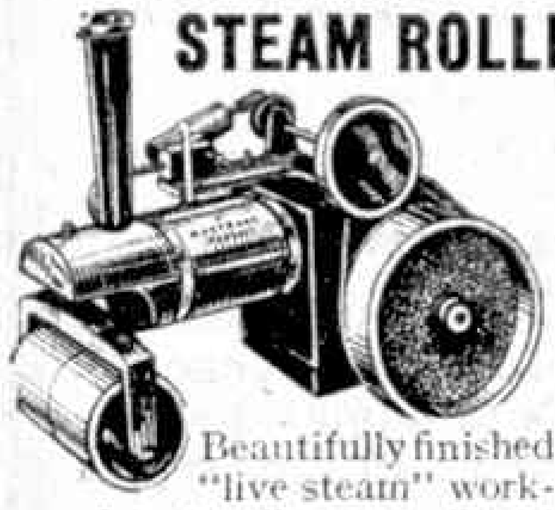

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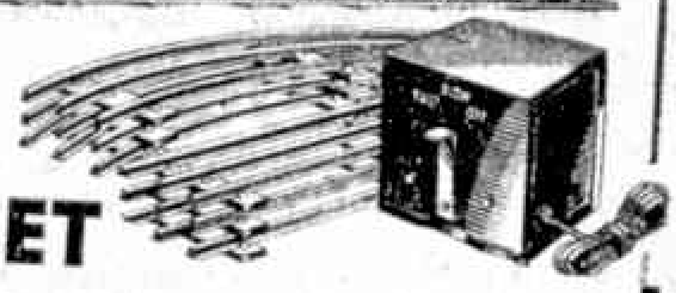

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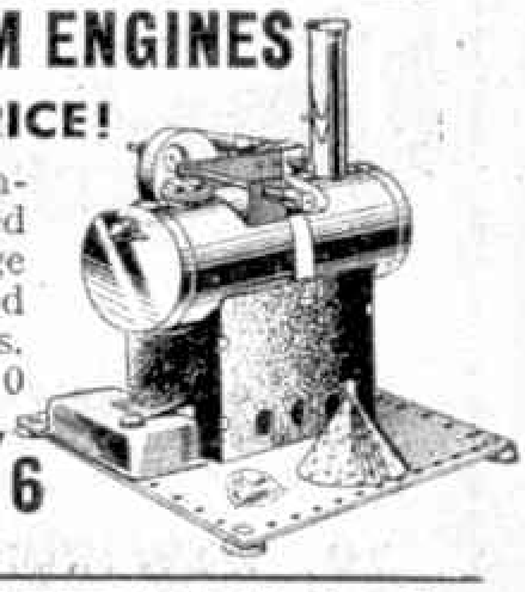

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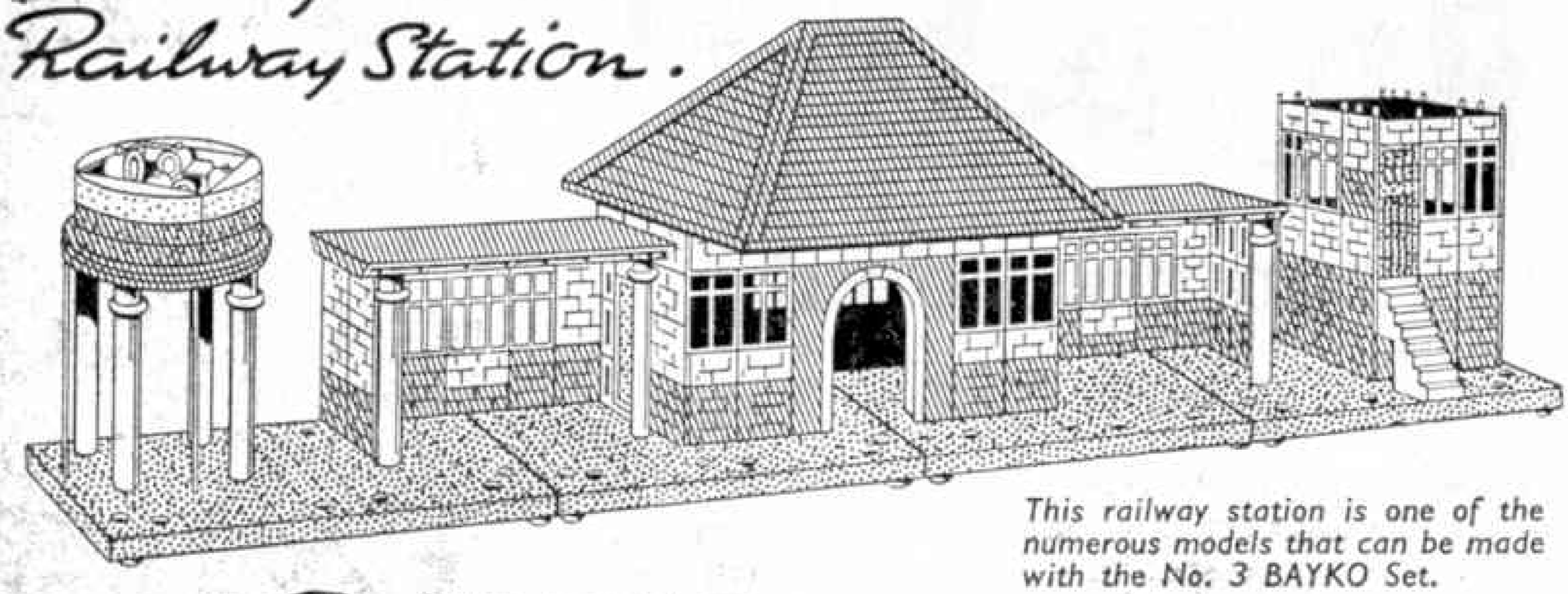

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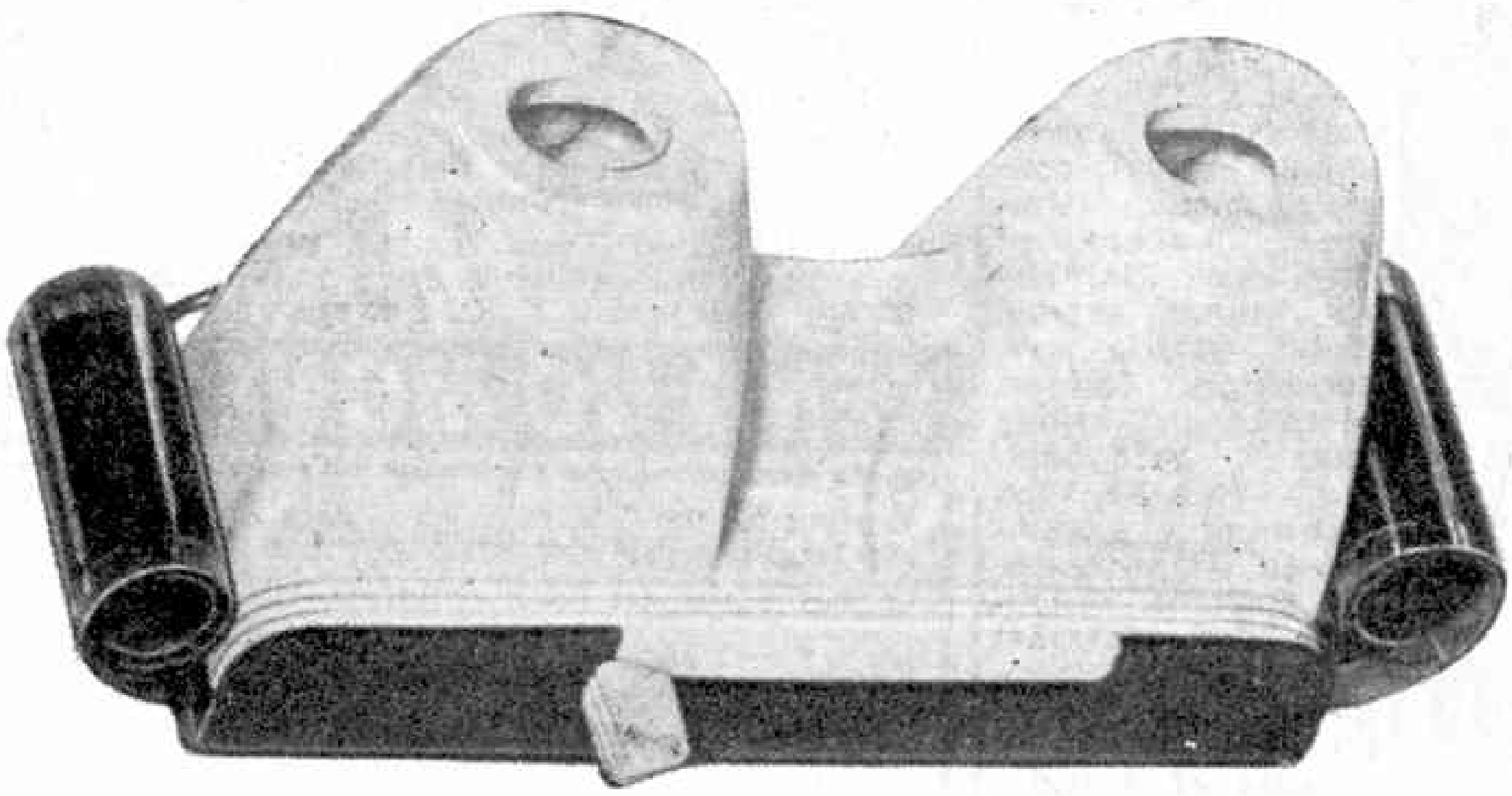

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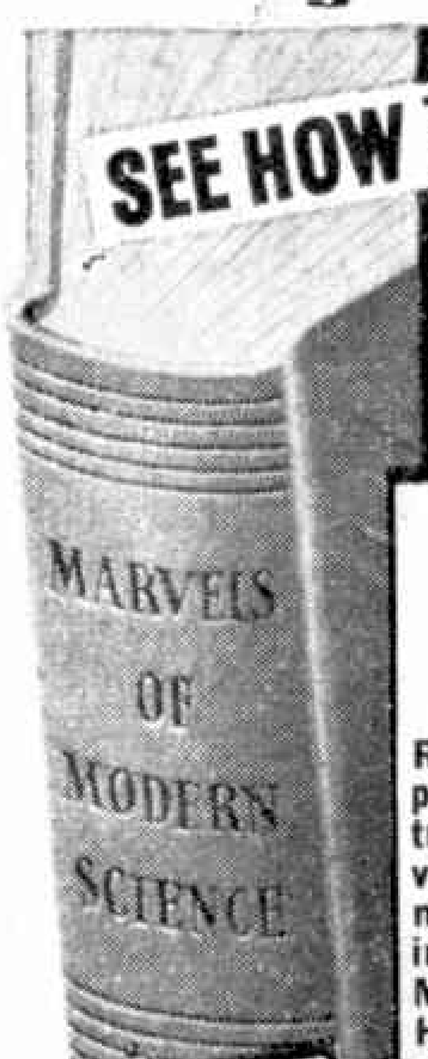

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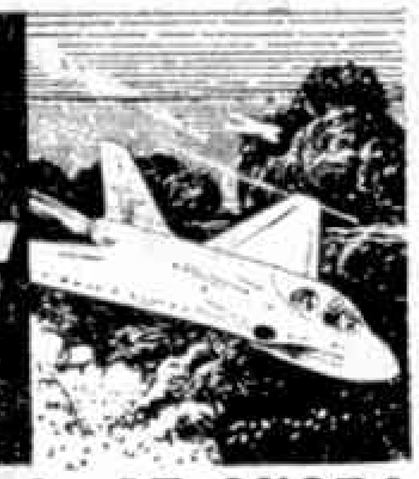

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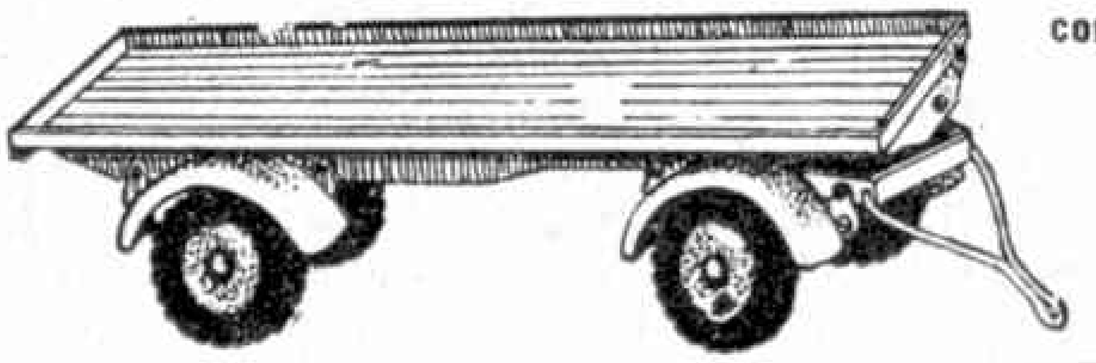

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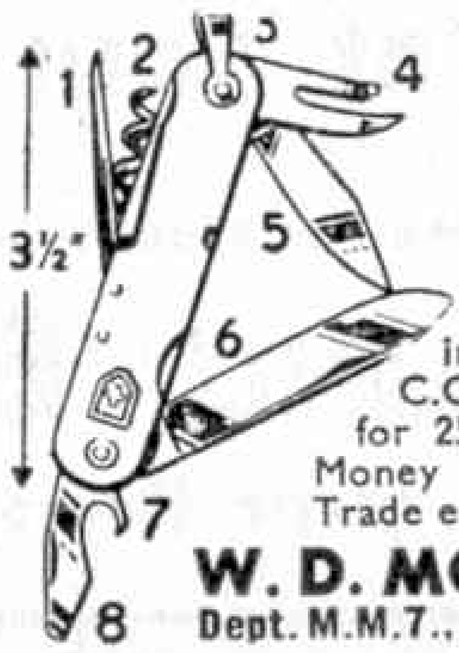

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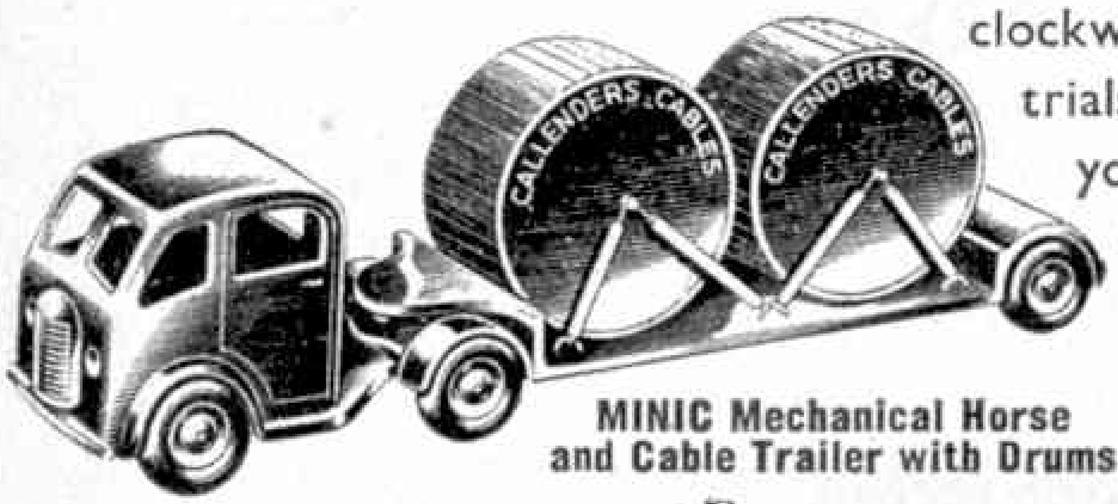

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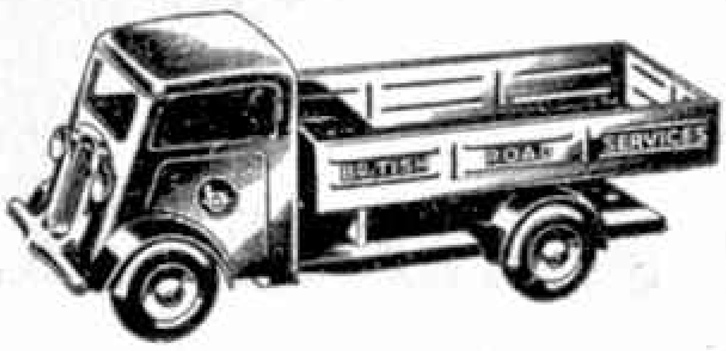
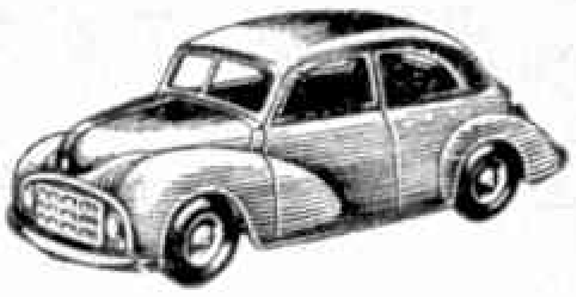


MINIC British Road Services Lorry



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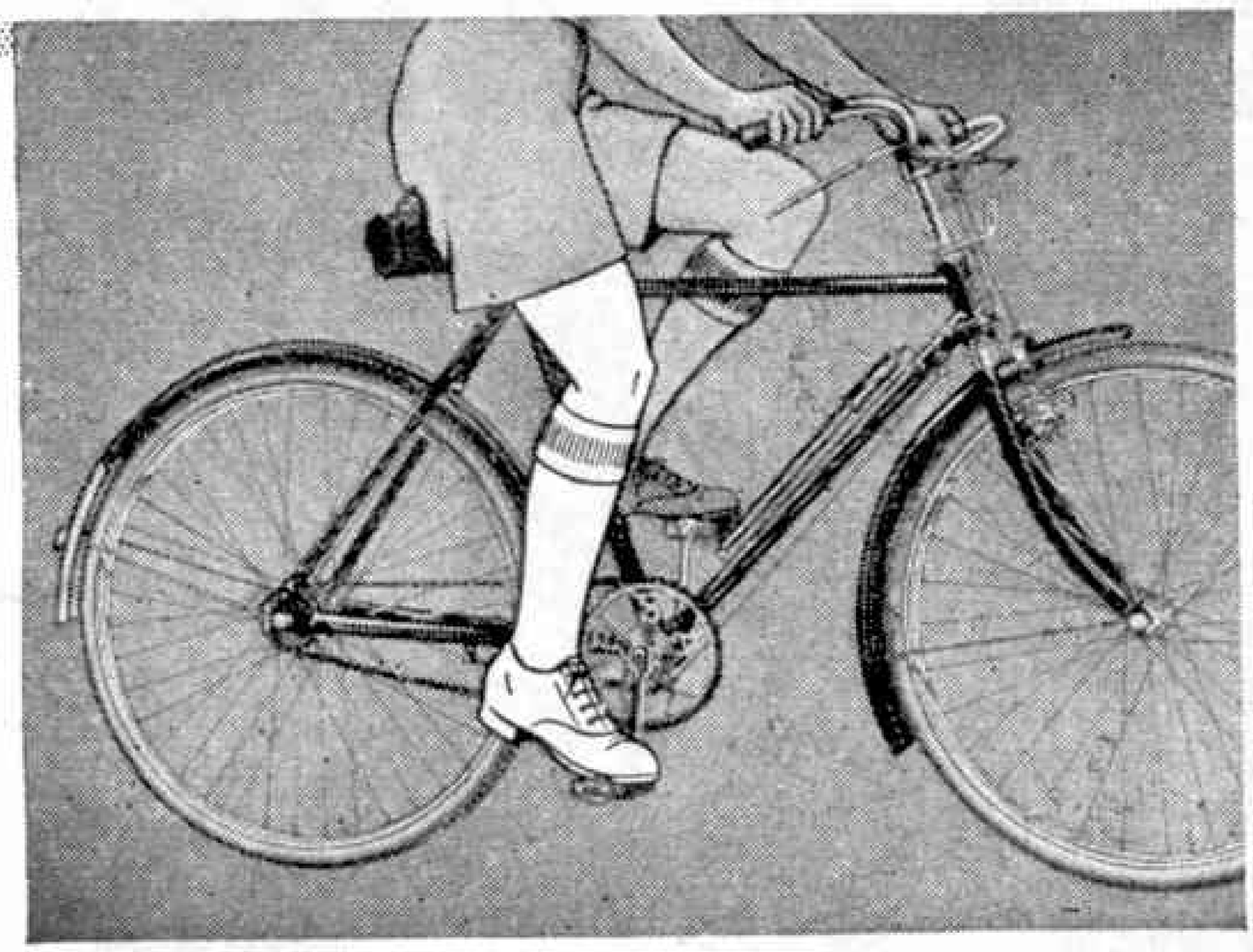

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MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
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Vol. XXXVI
No. 9
September 1951

With the Editor

Royal Aero Club, 1901—1951

Most of us are apt to think of London clubs as places where peppery old gentlemen bury themselves in red leather armchairs and their heads in *"The Times,"* to get away from the hustle and bustle of the outside world. That picture is far from true as regards the *"Royal Aero Club,"* which celebrates its 50th birthday this month. In fact, the Club and its members have been responsible for organising some of the biggest hustles and bustles of the last half-century, including all the world air speed records and Schneider Trophy contests held in this country.

Even its birth was like that of no other club, because the decision to form a club for aeronauts was made by three people—Frank Hedges Butler, his daughter Vera, and the Hon. C. S. Rolls—while flying in a balloon 5,000 ft. above the Kentish suburbs of London on 24th September 1901. As soon as they landed they rushed off to register the name *"Aero Club of the United Kingdom,"* and a few weeks afterwards announced that the object of the new Club was to issue certificates to members considered competent and experienced enough to take control of a balloon, and to organise congresses, exhibitions and races.

The Aeroplane Arrives

Two years later the aeroplane arrived on the scene, and the balloon gradually lost favour. But the Club's founders had foreseen that possibility, and from the start had welcomed would-be aeroplane pilots. Rolls himself was one of the greatest pioneer British aviators, and made the first two-way air crossing of the Channe before becoming the first Englishman to die in an aeroplane accident.

Since then the *"Royal Aero Club"*—it became Royal in 1910—has been responsible for supervising all British aircraft sporting events and record attempts. It has also helped to make all of us more air-minded by assisting at such shows as the recent *"Fifty Years of Flying"* Display at Hendon, which illustrated the whole development of flying from the days of balloons and stick-and-string boxkites to the supersonic jet-planes of to-day.

Seeing the tremendous progress made in the Club's first 50 years, one can only wonder whether spaceships will have made even the planets our neighbours by the time it celebrates its 100th birthday!

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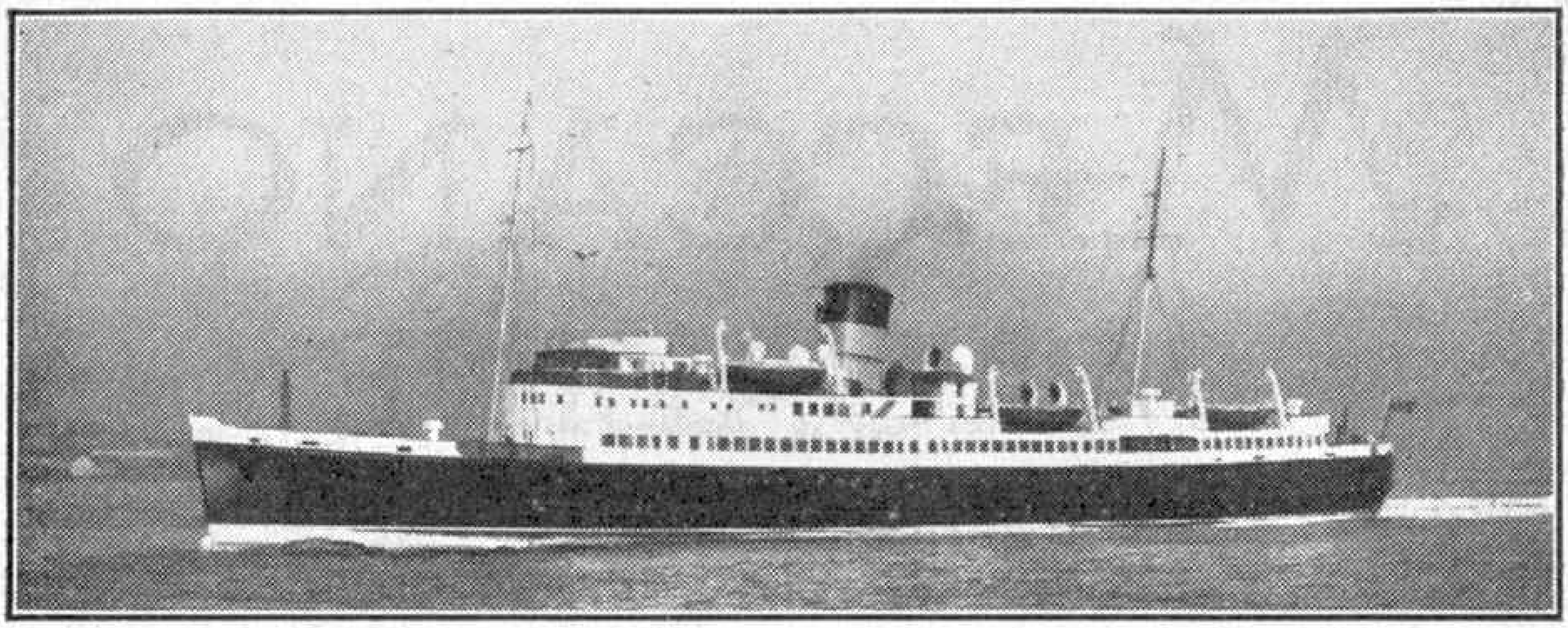


The Isle of Man Steamers

Sixty Million Passengers Carried in 121 Years

By Arthur Nettleton

ONE of the most popular passenger steamship services in the United Kingdom is 121 years old this year, and it was fitting that the birthday fell at the height of the holiday season. The Isle of Man Steam Packet Company, originally called the Mona's Isle Company, was founded in 1830. Holidaymaking as we know it to-day was then in its infancy, and the ships plying to and from the Island served only the resident Manx populace and occasional visitors. Since the birth of the steamship company, however, an average of about 500,000 people a year have been carried between the mainland and Douglas, a conservative estimate putting the total for the 121 years at 60,000,000 passengers! Without this transport facility the Isle of Man would not have become the popular holiday centre it is nowadays.

The first steamship built for the Company was *"Mona's Isle I,"* a paddle boat launched from the shipyards of John Wood at Glasgow. Her gross tonnage was 200, and she was fast for her day, being able to perform the run between Liverpool and Douglas in about eight hours. Robert Napier, who designed her engines, stated in after years that he was largely indebted to *"Mona's Isle I"* for his prosperity and reputation, the success of this ship having established him as a marine engineer of skill and high repute.

"Mona's Isle V," the most recent Isle of Man steamship, put into service this year. Her maximum speed is 21 knots. Photograph by courtesy of Cammell Laird and Co. Ltd.

The vessel, which cost just over £7,000, had her paddle-boxes forward instead of amidships, her portholes were square, and her very thin, lofty black funnel had a red band. An incidental point is that this distinguishing feature, often regarded as having been pioneered as the "trade mark" of Cunarders, was in use on Isle of Man packet boats before it was adopted by the Cunard Line.

"Mona's Isle I" made her first trip for the Mona's Isle Co. on 14th August 1830, when she steamed to the Menai Bridge and back with her owners aboard. Her first fare-paying trip took place the next day with 32 passengers. She remained in service until 1851, but during those 21 years the company built up a considerable fleet.

"Mona's Isle I" was soon considered too valuable to risk on the winter service! So a smaller ship, *"Mona I,"* was ordered from the same builders, and she took over the Douglas-Liverpool run in October 1832, after being employed on trips round the Island during the summer. She was slightly faster than *"Mona's Isle,"* and often made the run from Liverpool to Douglas in less than 7½ hrs. Her length was 98 ft. compared with the 116 ft. of the other ship.

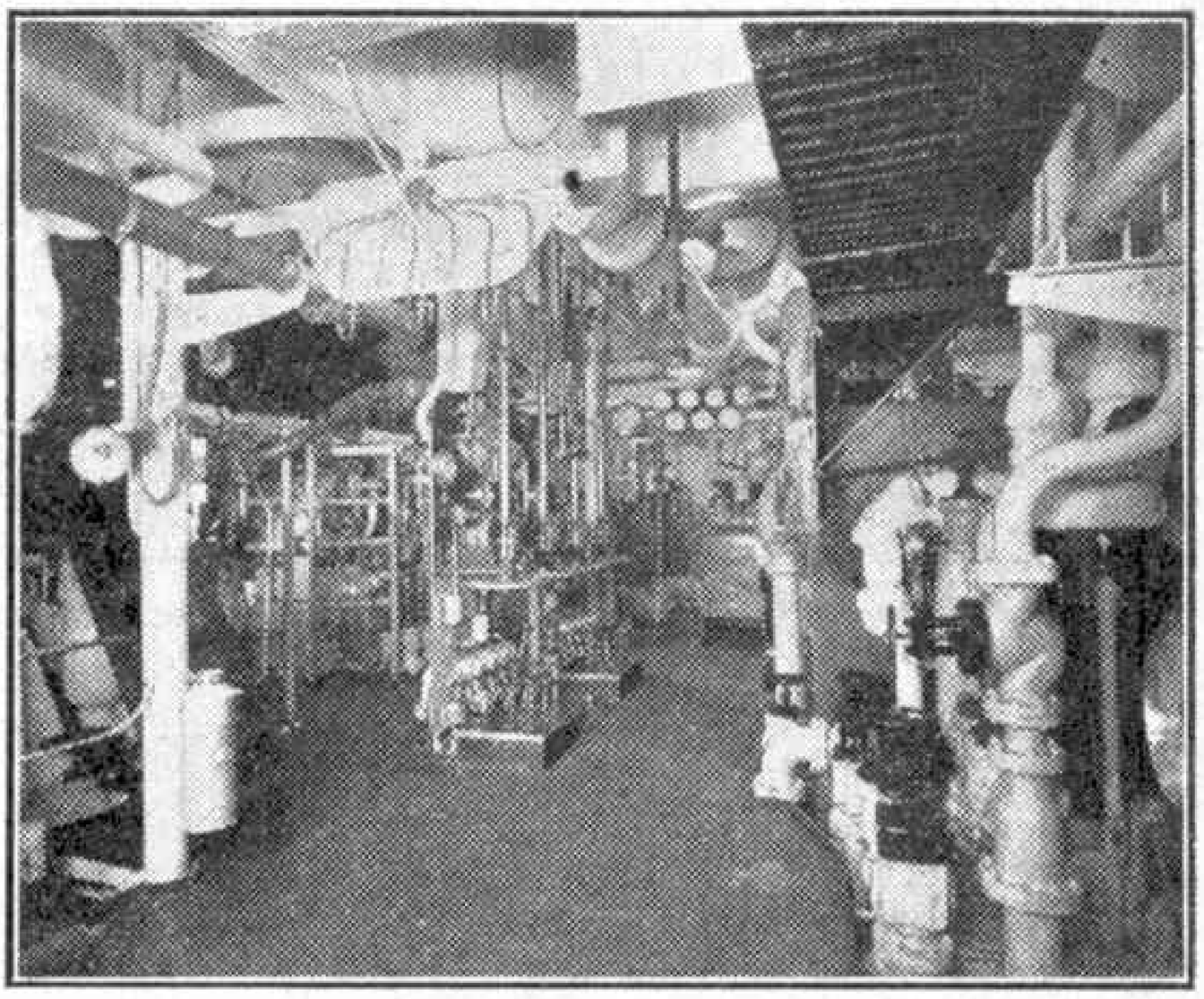
Space does not permit a detailed description of all the later vessels owned by the company in its early days. They

included the 350-ton *"Queen of the Isle,"* which defeated the "crack" packet-boat operated on the Liverpool run by the Government for the carriage of mails. There was the first *"King Orry,"* which cut the Douglas-Liverpool time to 6 hr. 20 min., and the first *"Ben-my-Chree,"* built in 1845. Two of these vessels actually had the same engines, for *"Queen of the Isle"* was turned into a full-rigged sailing ship and her engines were installed in *"Ben-my-Chree I."* The new ship was the first of the company's steamers to be made of iron.

Between 1845 and the end of last century, no fewer than 20 new passenger ships were put into service by the I.O.M. Steam Packet Co., most of them with names perpetuated by the present fleet. Among these were *"Tynwald," "Snaefell"* and *"Mona's Queen."* The biggest of these 19th-century steamers was the 1,564-ton *"Mona's Isle III,"* launched in 1882. She was a reversion to paddle propulsion, three earlier ships owned by the company having been screw steamers.

When the 1914-1918 war broke out, the company had 15 steamers. Eleven of these were chartered by the Government for conversion into seaplane carriers, armed boarding vessels, and so on. *"King Orry III"* was attached to the Grand Fleet, and was the sole representative of the British Merchant Navy at Scapa Flow when the German Fleet surrendered in 1918.

At the end of hostilities, only four of the 11 requisitioned ships returned to their peace-time duties. Four of the pre-war fleet, including the fine *"Ben-my-Chree III,"* had been lost on war service, and three of the others had been bought outright by the Admiralty.

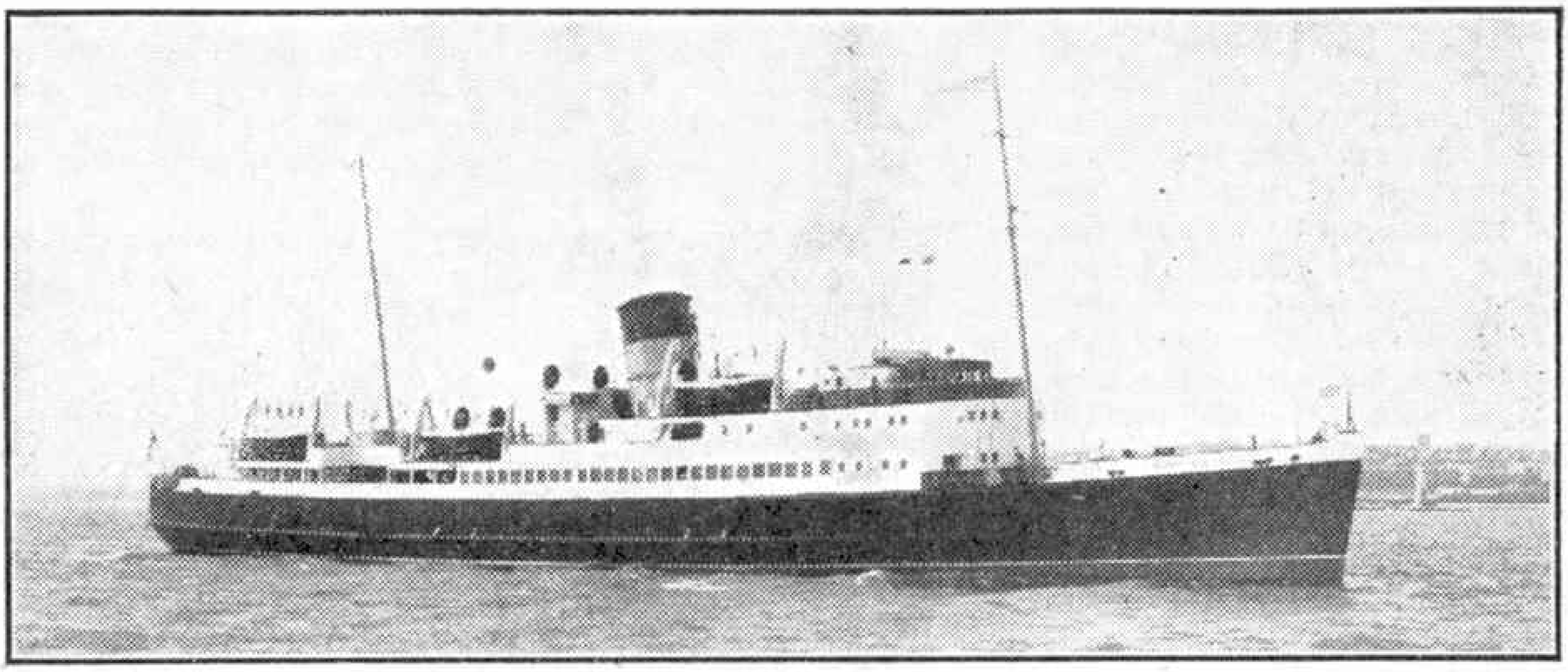


In the engine room of "Mona's Isle." The vessel is driven by turbine engines. Photograph by courtesy of the Isle of Man Steam Packet Co. Ltd.

To expand the I.O.M. fleet rapidly to something like its normal tonnage, ships were bought from the Admiralty and from other shipping companies. For instance, the *"Manxman,"* originally owned by the Midland Railway Co., was purchased from the Admiralty by the I.O.M. Steam Packet Company after her war service, and in 1921 she was converted to an oil-burning vessel.

Another deal with the L.M.S. occurred in 1928, when the I.O.M. Steam Packet Company took over the Heysham-Douglas service and acquired the railway steamers *"Duke of Cornwall"* and *"Antrim."* These were renamed *"Rushen Castle"* and *"Ramsey Town,"* and became well known to Isle of Man holidaymakers between the two world wars. The vessels were sold in 1937 and 1947 respectively.

The first-class dining room of "King Orry IV," one of the five vessels of the I.O.M. fleet built since the war. Photograph by courtesy of Cammell Laird and Co. Ltd.



The present "Mona's Queen" s the fourth of her name. Photograph by courtesy of the Isle of Man Steam Packet Co. Ltd.

In 1939, as in 1914, the I.O.M. fleet went on war service. *"Mona's Queen III"* and *"Fenella II,"* built in 1934 and 1937 respectively, were sunk during the evacuation of Dunkirk in May 1940, and *"King Orry III"* was lost in similar circumstances on the following day. *"Tynwald IV,"* which was acquired by the Admiralty for conversion into an anti-aircraft vessel, was sunk during the landing at Bougie Bay, Algiers, in 1942.

The present fleet consists of *"Lady of Mann," "Ben-my-Chree IV," "Mona's Isle V," "Snaefell V," "Tynwald V," "Mona's Queen IV," "King Orry IV" "Viking"* and *"Victoria,"* together with two cargo ships bought in 1932. *"Lady of Mann"* was launched in May 1930 to celebrate the company's centenary. She is a twin-screw geared turbine ship of 3,104 tons and has a length of 371 ft. Her indicated horse power is 12,700.

"King Orry IV," "Mona's Queen IV," "Mona's Isle V," "Tynwald V" and *"Snaefell V"* have all been built since 1945 by Cammel Laird and Co. Ltd. at Birkenhead, and have the same basic specification. Latest of the five is *"Mona's Isle,"* and our cover shows the scene at her launch last October. She has a gross tonnage of approximately 2,500, is 344 ft. in overall length, and has a speed of 21 knots.

Like the present *"King Orry"* and *"Mona's Queen," "Mona's Isle"* has five decks, four of which are for the use of passengers. Her raked stem, single funnel, and cruiser stern give her a modern, striking appearance, and her appointments and equipment are in keeping with the latest marine engineering ideas.

The vessel is propelled by twin screws driven by two sets of turbines through single reduction gear, the total shaft horse-power being developed at a propeller speed of 275 revs. a minute. The steering gear is of the steam hydraulic type, and there is an auxiliary bow rudder operated by a steam screw gear, enabling the vessel to navigate stern first and avoid the need to turn about in restricted waterways.

Deep tanks for trimming purposes are also fitted at both ends of the ship, and the oil fuel bunkers are arranged in the wings of the boiler-room. The steam generating installation consists of three Babcock and Wilcox marine type water-tube boilers with a working steam pressure of 250 lb. per sq. in. They are arranged to burn oil fuel on the closed stokehold system of forced draught.

"Mona's Isle" and her sister ships can each accommodate 2,500 passengers, and not only has special attention been given to their comfort, but provision has been made for speedy embarkation and disembarkation. To this end, a large number of wide gangway doors have been provided in the ships' sides.

The Company's two cargo ships are *"Peveril"* and *"Conister."* A diesel-engined vessel for this section of the fleet, to be called the *"Fenella,"* is being built at Troon. It will be ready before the end of the year.

The record of this service linking the mainland of Britain with the Isle of Man is a proud one, both in the matter of regular sailings and safety. The company now have a fine fleet of ships, and the five post-war vessels particularly are noteworthy in their class.

We are indebted to the Isle of Man Steam Packet Co. Ltd. for the photograph on which our cover is based.

The New Woodhead Tunnel

Railway Bore Over Three Miles Long

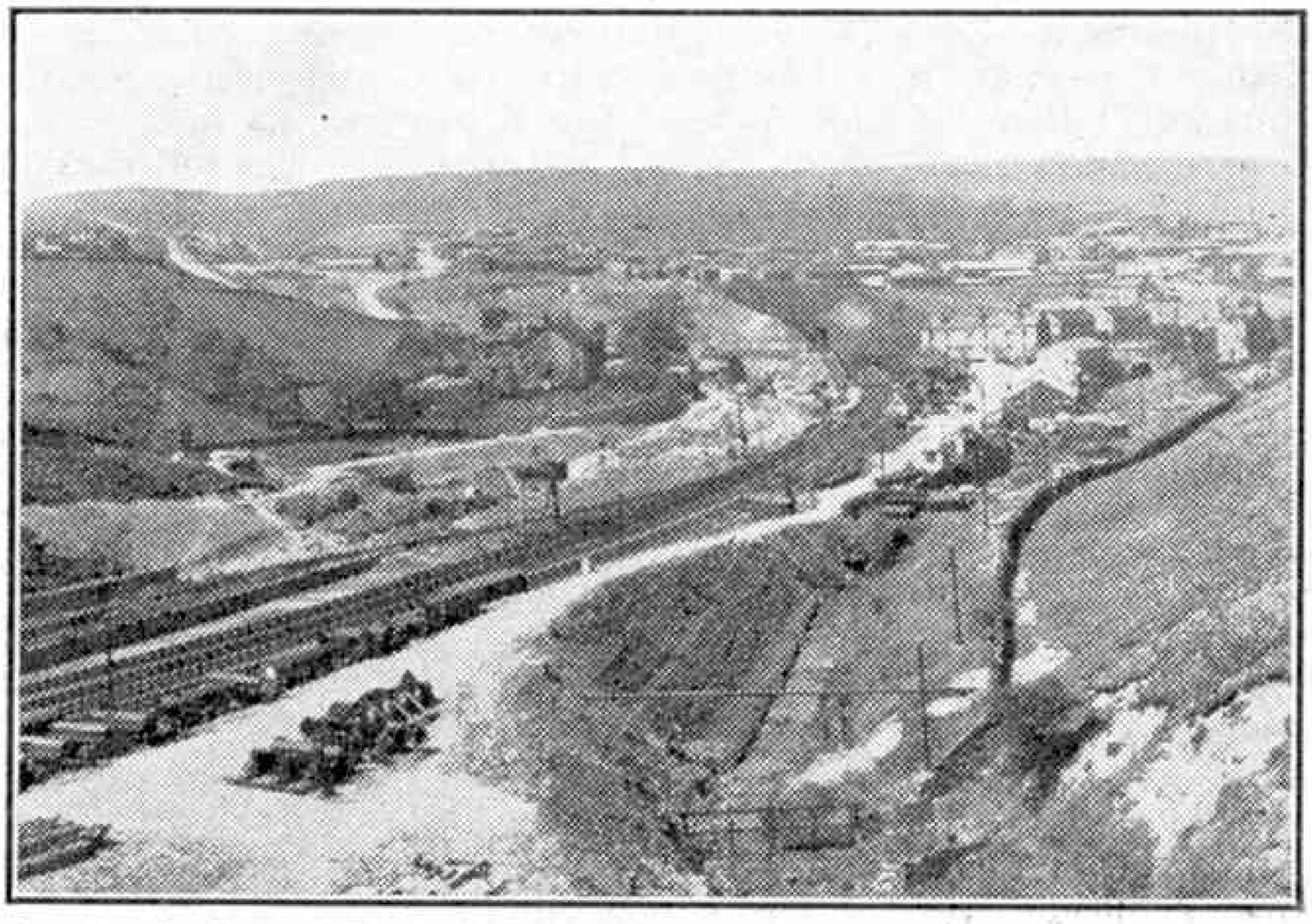
IN connection with the electrification of the main line of British Railways, Eastern Region, between Manchester (London Road) and Sheffield, a new tunnel over three miles in length is being driven through the Pennine Range between Woodhead and Dunford Bridge. Tunnels have existed between these places for over a hundred years. Their length and isolated situation, and the fascination that is peculiar to all the Pennine railways, give special interest to this particular stretch of line.

It was originally the Sheffield, Ashton-Under-Lyne and Manchester Railway, and its construction was begun on 1st October 1838 at a place near the western end of the present Woodhead tunnels. The first section of track, between Manchester and Godley, was brought into use on 17th November 1841. The section reaching Woodhead was opened on 8th August 1844, and the line on the eastern side of the Pennines to Sheffield was opened on 14th July 1845.

At that time Woodhead Tunnel, the greatest engineering project on the line, still awaited completion. In the meantime, passengers travelled over the "hill," as it is often called, by coach. Work on the tunnel had begun late in 1839, and was finished in December 1845. This first boring accommodated a single line only, which soon proved to be totally inadequate, and it was necessary to drive a second tunnel to give a double track. This second tunnel was opened on 2nd February 1852.

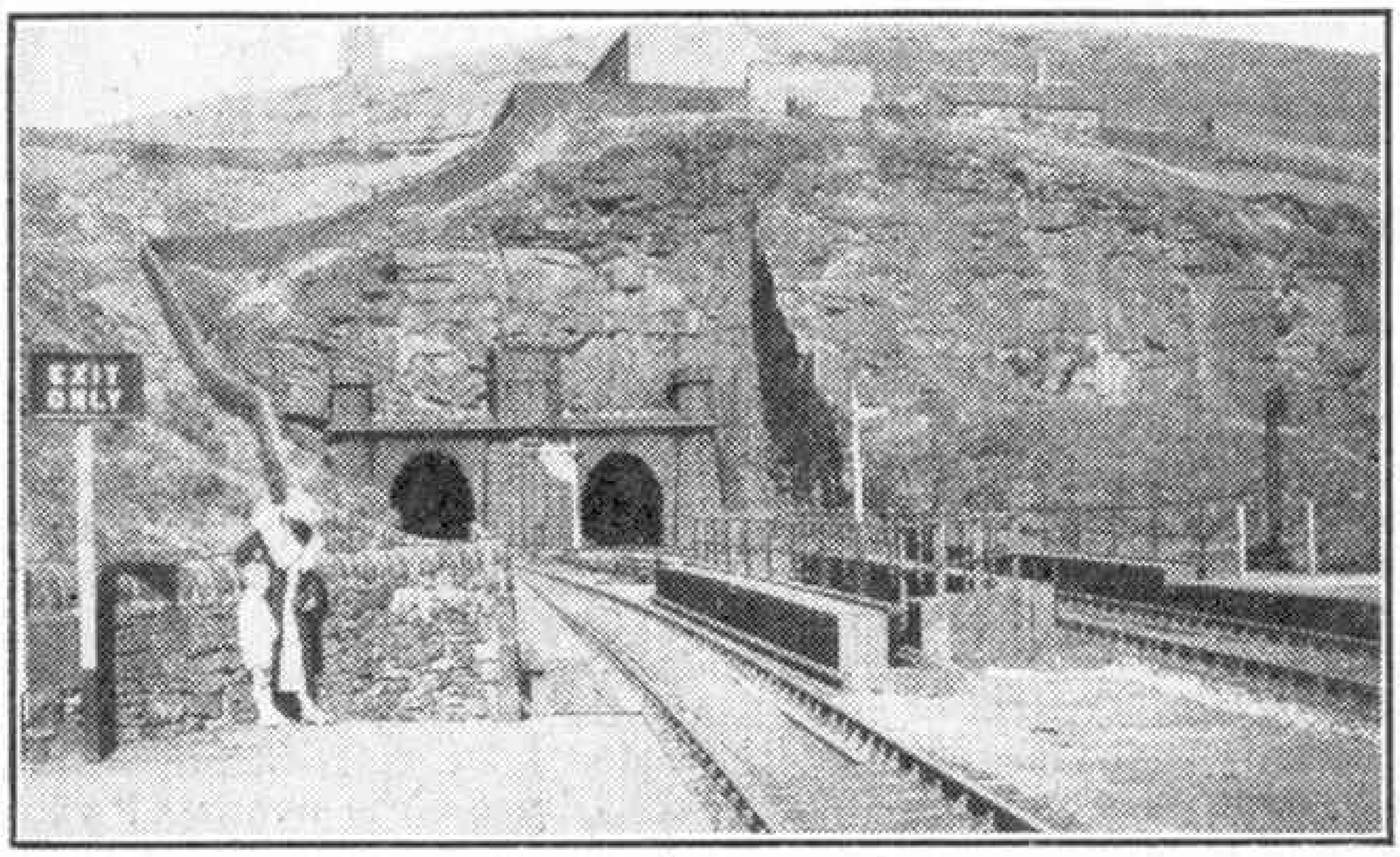
The shape of the two old tunnels is a little unusual, as can be seen from the photograph on the next page. The arches are sprung at 10 ft. from rail level, the height being 18 ft. from rail level to the top of the arches. The width is 15 ft., and channels run on each side of the tracks for drainage.

Ventilation of the tunnels has always been a problem with steam locomotives; the fact that there is a rising gradient of 1 in 201 towards Sheffield means that hard-working engines choke the bore with exhaust smoke and steam. In view of this, and the density of traffic, the L.N.E.R. decided some years before World War II to electrify on the overhead wire system the whole line between Manchester, Sheffield and Wath, at which last place lies the great marshalling yard. The decision was taken to construct an entirely new tunnel, as the old ones, owing to their age and general unsuitability, could not meet present-day needs.



A general view at Dunford Bridge looking towards the eastern end of the Woodhead Tunnels.

The line now carries approximately 170 trains per day, and freight traffic predominates. The most important commodities carried over the line are coal, minerals and steel. It is customary to-day for freight trains to be banked up to the tunnel entrances, which are approached by steep gradients, by locomotives stationed in the vicinity for that purpose. There is no doubt that great benefits will result from the use of electric locomotives, as the line capacity can be increased, and the new tunnel will be clean and airy.



The tunnel mouths at Woodhead in 1935. The rocky face on the right is now pierced by the new tunnel shown below. Photograph by Arthur Phillips.

Early in 1949 preliminary work started on the construction of the new tunnel. The general scheme was prepared under the direction of the Civil Engineer of the Eastern Region, in accordance with the decision taken by the former L.N.E.R. The detailed plans were made, and the conduct of the work on the site is being supervised on behalf of the Railway Executive by Sir William Halcrow and Partners, Consulting Engineers, Westminster, S.W.1. It was estimated that the construction of the new tunnel would take from three to four years.

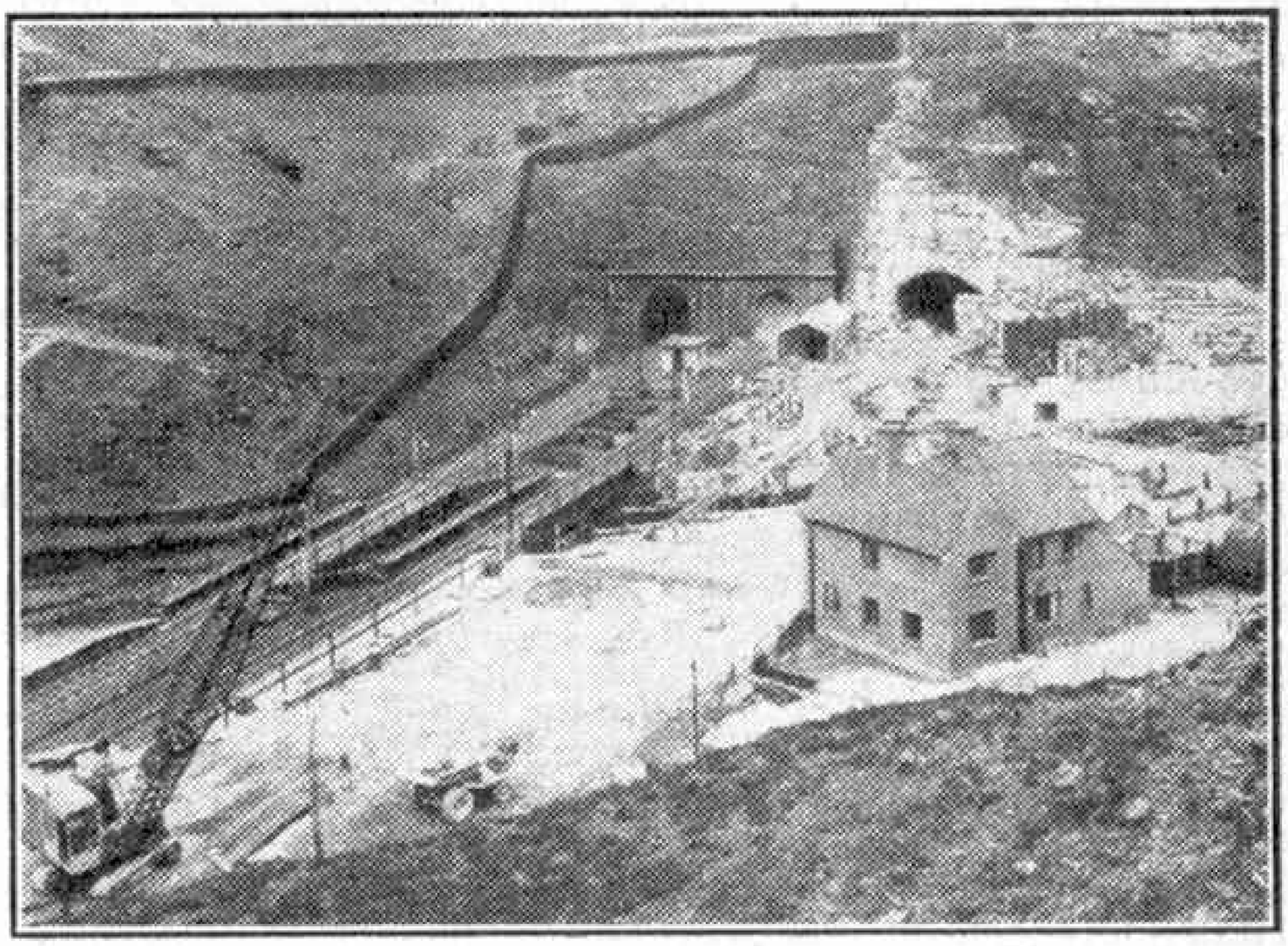
Owing to the desolate and isolated nature of the country, in the heart of the Pennines, it was found necessary to construct a special camp for the workmen, and a site on the open hillside at Dunford Bridge was selected. Part of this can be seen in the illustration on page 389.

The work of sinking a construction shaft at a point approximately midway between Woodhead and Dunford Bridge was begun in June 1949, and tunnel level 467 ft. below was reached in the early summer of 1950. As the shaft was sunk its walls were lined with concrete, and this task has now been completed. Gear and cages of the pit-head type were erected at the top of the shaft, and the cages are electrically driven. Soon after the shaft was started, boring of a pilot tunnel began in August 1949 at Woodhead, and in November 1949 at Dunford Bridge.

The driving of pilot headings from the bottom of the shaft towards Woodhead and Dunford Bridge was begun immediately after the shaft had been completed. The section of the pilot tunnel driven from the foot of the shaft and that driven from Dunford Bridge were linked up in April, 1951, when the error in alignment was found to be only one-quarter of an inch. In the following month the pilot tunnel was completed throughout, the error in alignment between the respective headings being only one-eighth of an inch.

The full excavation size of the new tunnel will be 31 ft. in breadth and 24 ft. in height. When an "*M.M.*" representative visited the site in June last, enlargements had already been made for a considerable distance at both ends. When the task is completed the tunnel will be lined with concrete 1 ft. 9 in. thick throughout its whole length.

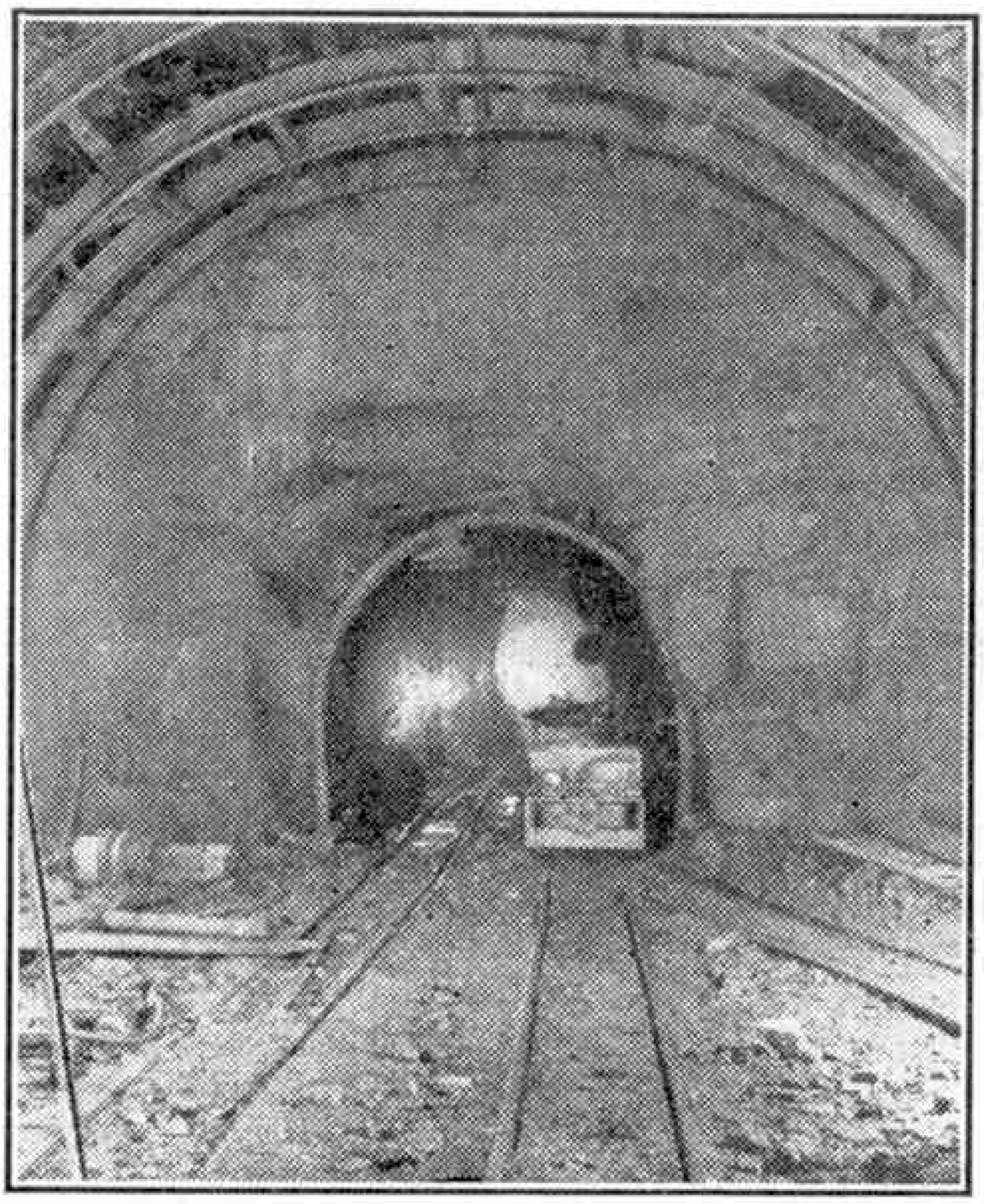
Difficulties were expected in the construction of the new tunnel. From



The old and the new tunnels at Woodhead. Interesting comparisons are possible between this picture and the upper one on this page.

original geological data obtained in building the existiug tunnels, it was known that beds of shale intersect the general sandstone formation, and more than one fault in the rock has been encountered as well as the penetration of water. As a result much of the tunnel walls and roof has had to be supported by steel ribs. The tunnel is being excavated by blasting, a drilling carriage being used so that drilling can be carried on at three levels simultaneously. The carriage, which runs on rails, is drawn back well clear before blasting actually takes place.

The men working at all tunnel faces and elsewhere are connected by an extensive field telephone system to the works offices, by which means direct and constant control is maintained by the supervising engineers at all times.



Inside the new tunnel, showing the difference in size between the pilot bore and the enlarged or full-size tunnel.

Other works in connection with the tunnel include the reconstruction of the stations at Woodhead and Dunford Bridge. New rail and road bridges are also involved in these changes. All these works are proceeding simultaneously with the tunnel, so that all may be ready for the running of the electric trains when the job is completed. The immensity of the task will be realised when it is recorded that over half a million cubic yards, that is, in the region of a million tons of soil and rock, will have been removed from the new tunnel and the approach cuttings on its completion.

The method of removing the loose rock and soil from the working face is of special interest. A device known as a muck-hoist is in operation. An empty skip is pushed up to the rock face. A mechanical loader fills it with rock and spoil, and the hoist then lifts the skip clear of the rails so that another empty one may be moved up. The full skip is then replaced on the rails and hauled clear. The shunting of the skips and their haulage to and from the working faces is performed by small four-wheeled, battery electric locomotives, and a shed for the servicing of these is located just outside the tunnel portal. As work proceeds and the approaches are cleared a more convenient system of rock disposal will be brought into operation, as at present it has to be removed from the site in dumpers.

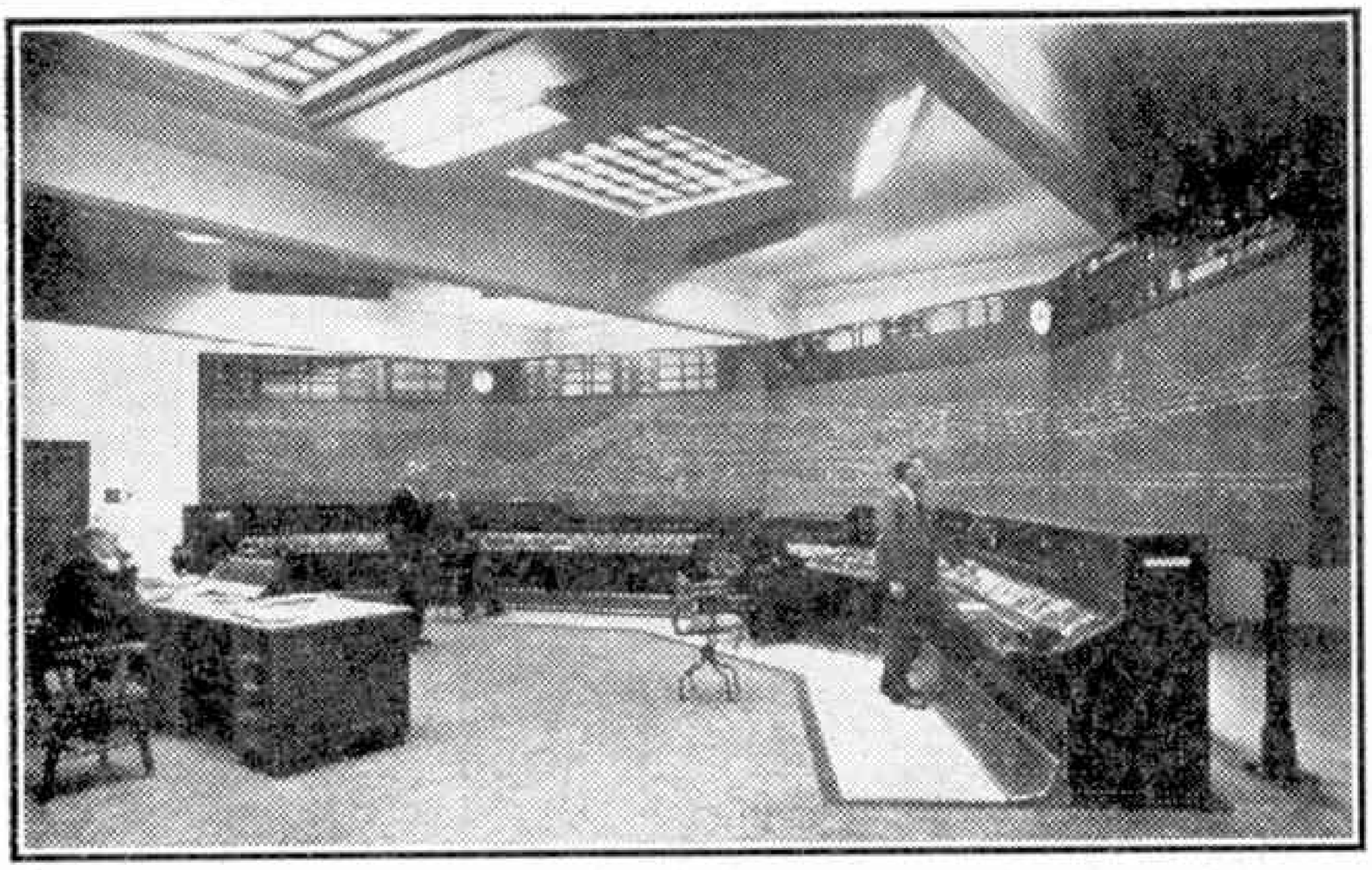
To facilitate the new works, the station buildings on the down platforms at Dunford Bridge and Woodhead stations have been demolished. Some sidings have been relaid at Dunford Bridge, at which station a new cutting has been excavated for the new line. At Woodhead the original station, a fine building of Gothic design, has been demolished and a new house has been built near by for the stationmaster. Passengers waiting for trains at these stations find themselves surrounded by such intense activity as probably has been known in these remote places on only two occasions since time immemorial.

It is intended that the tunnel will be completed by 1953, when we may look forward with joyful anticipation to the inauguration of the electric train services over a line which has known the thunderous exhausts of hard-working steam locomotives these many years. Then the shafts and tunnel portals which have poured forth smoke and steam for so long will be silent and deserted. The peculiar odour for which the present tunnels are noted will be entirely absent in the new bore. Whatever steam locomotives remain on the line will be confined to yard shunting duties.

We are indebted to British Railways (Eastern Region) for many details in this article and for three of our illustrations.

Signalling Developments at York

THE important railway centre of York on the East Coast main line, which has been termed "Grand Junction for the North," has recently been the scene of the installation of the largest route relay interlocking scheme in the world. This outstanding signalling achievement is a worthy addition to the extensive power signalling plant already in use in the North Eastern Region of British Railways. The York area under the new scheme is operated from the largest control panel of its kind.

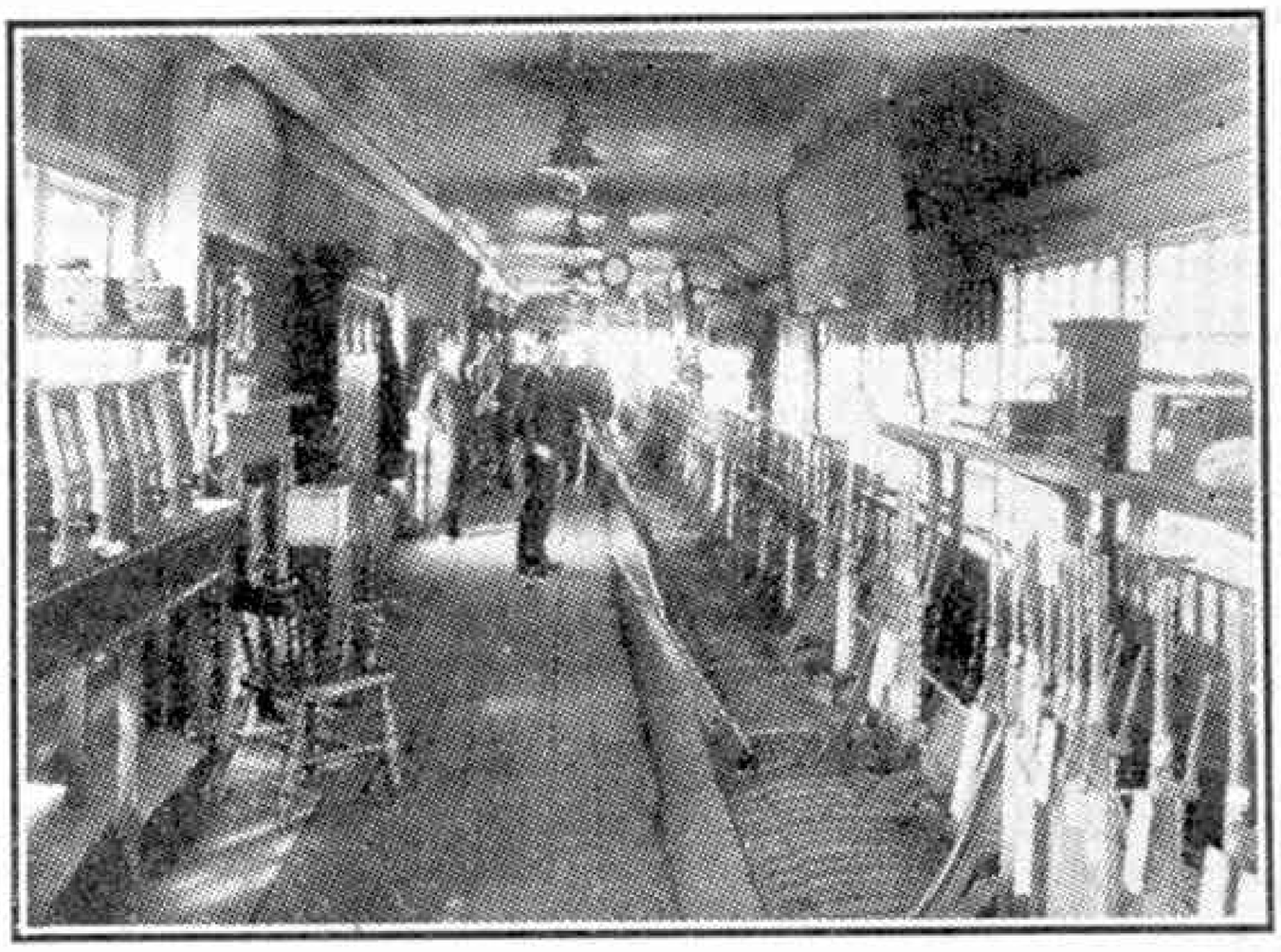


The control panel of the new signalling installation at York. The photographs and details on this page are by courtesy of British Railways (North Eastern Region).

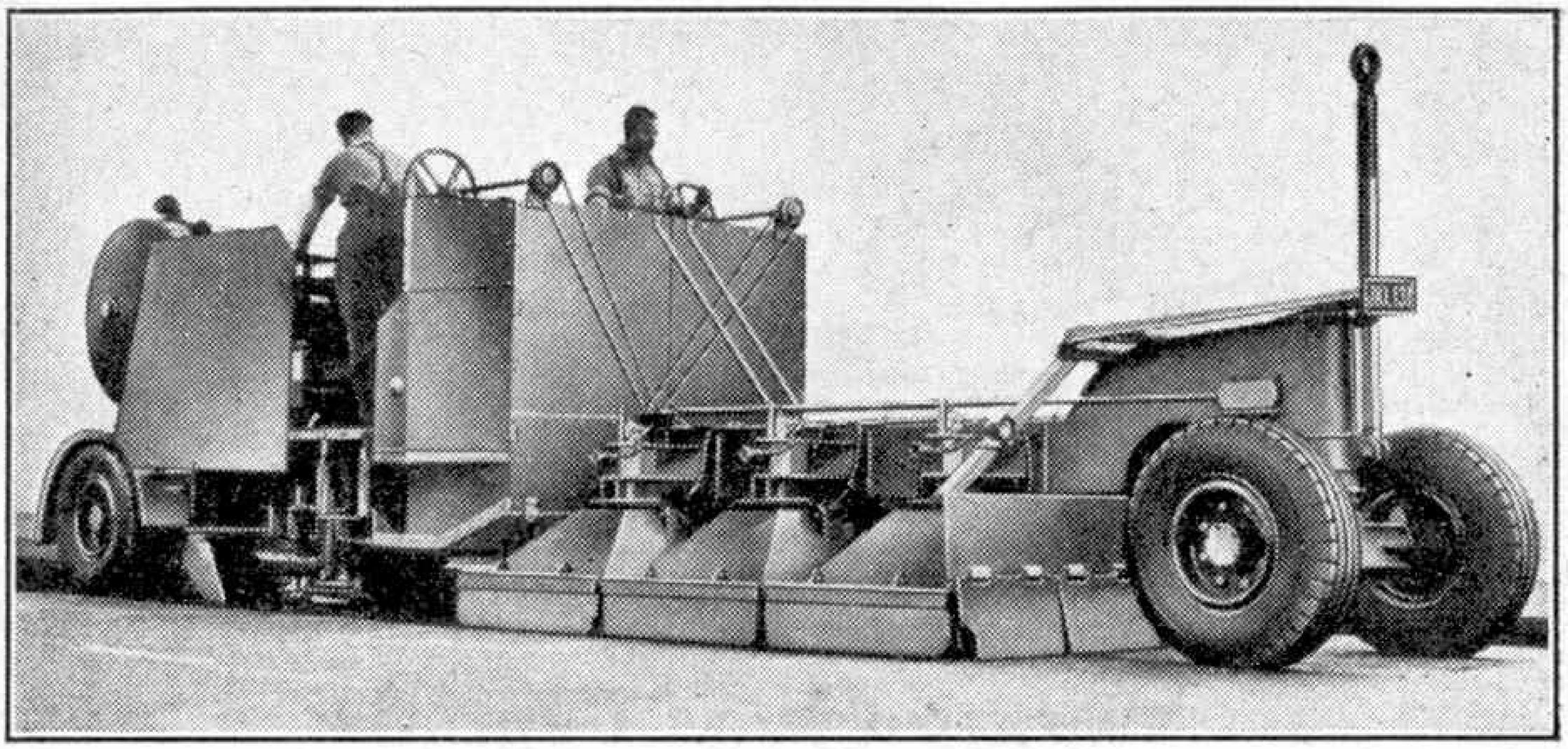
There were formerly eight mechanically-operated signal boxes mustering between them 867 levers, and they employed a total staff of 70. In place of these is now a single new air-conditioned signal box on the most modern lines with a staff of 27. The new box controls $33\frac{1}{4}$ miles of track in and around York and the 16 platforms at York station itself. The remarkable control panel with its all-electric thumb-and-finger operation deals with 827 separate routes. There are 74 actual colour-light signals of the three- or four-aspect type; and 157 sets of points operated by 277 points machines are controlled electro-mechanically.

The control panel displays a replica of the tracks under its control. It contains 5,416 miniature light bulbs for route indication and track occupation; and there are 150 bulbs for telephone indication. Immediately a track is occupied the relative bulbs on the panel are lit up, giving the traffic regulator and the signalmen an overall picture of track occupation in their area, so enabling them to size up the position quickly.

The great change in operating conditions that has been brought about by the new installation can be gathered by the two pictures appearing on this page. Previously the exchange of messages between boxes and the pulling over of signal levers occupied much of the men's time. Now one simple operation, that of turning a switch, sets up the route of a train for anything up to 1,500 yards. In addition to authorising movements of colour-light signals this ensures that up to 10 sets of points are in the correct position and are locked for the run of a particular train.



A typical view in Locomotive Yard box, one of the eight cabins now replaced by one under the new scheme. This box contained the largest manual signalling lever frame in the British Isles.



A Road Planing Machine

By Richard J. Salter, B.Sc.(Eng.), A.M.Inst.H.E.

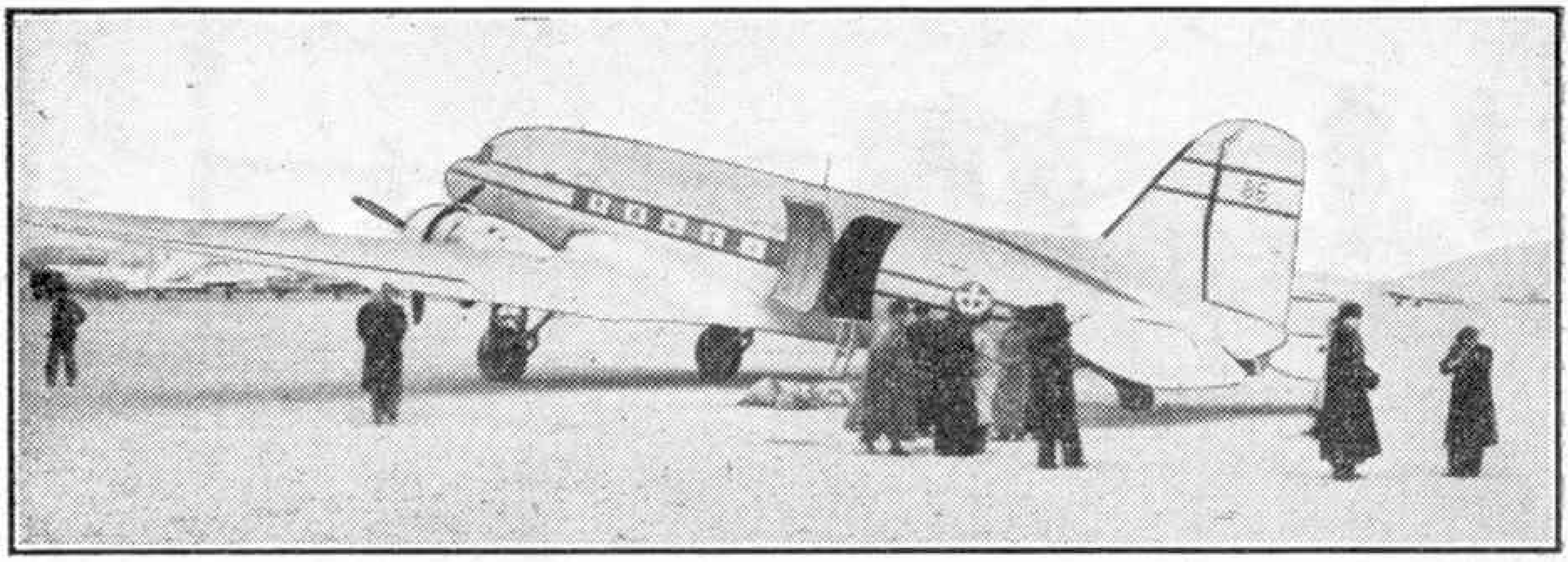
SINCE the end of the last war many of our roads with bumpy surfaces have been planed smooth with machines similar to the one shown in the illustration above. Tarmacadam roads are made up of small pieces of stone varying in size from those which will go through a ring $2\frac{1}{2}$ in. in diameter to those which are as small as dust. All these separate pieces are tightly held together by tar or bitumen which acts as glue and after rolling by a steam roller sets hard, forming a smooth road surface as we all know it.

After cars and heavy lorries have run over the surface of the road for several years, and the summer sun has softened the tar, the tarmac surface becomes rough and bumpy. The older method to form a smooth surface was to cut out all the corrugations, as they are called, with pneumatic drills. Nowadays much time and money can be saved if the old surface is planed smooth in much the same way as a piece of old wood. This planing is done with a heating and planing machine which first of all softens the tarmacadam surface by means of an oil flame and then planes the surface smooth with a steel blade.

These combined heating and planing machines consist of one or more metal boxes at the front of the machine with the bottom side open to the road surface. Into these boxes, known as the heater, oil is sprayed at high pressure and ignited by means of a spark. The heat from this burning oil softens the tar or bitumen in the road surface. Immediately behind the heating hood is mounted the planing blade which can easily be seen in the illustration. This steel blade is in two pieces and is easily able to scrape off the warm and softened surface.

The scraped off material is shovelled up behind the planing machine and whilst it is still warm it makes an excellent surface for footpaths. One of the easiest ways of recognizing this machine in operation, from a distance, is by the smoke rising from the heating unit. If too much oil is being used, and the tar in the road is being actually burnt instead of softened, a large amount of smoke is to be seen rising from the heaters.

Probably some of you will have seen a modern resurfacing machine at work; these machines will lay a strip of tarmacadam 8 ft. to 12 ft. wide at a very rapid speed. They are very often used after planing has taken place to provide a surface which is safe in wet and slippery weather. The lorries bringing the tarmac from the manufacturers are pushed by the Barber-Greene finisher, as it is called, so that the material falls from the lorries, passes through the machine and is laid on the road. Up to a hundred lorry loads of tarmac can be laid every day when a surfacing machine such as this is used.



A Chinese Nationalist Aviation Corporation liner at Tsingtao. Passengers en route to Peking stretch their legs.

Wings Over China

By Bernard Llewellyn

FOR travellers on Chinese air routes, Christmas 1946 was a "Black Christmas." Three aircraft crashed coming into Shanghai, and in previous weeks there had been other crashes elsewhere. I remember this period well, for then I was doing a great deal of air travelling and half expected that each journey would be my last.

Yet looking back on the story of Chinese air transport, not even that unfortunate Black Christmas can destroy one's sense of the achievements. It would probably be true to say that the operational efficiency of the two main companies, the China National Aviation Corporation and the Central Air Transport Corporation, was below that of western companies during the war and immediately afterwards. This was due to the shortage of trained ground staffs and spare parts. But one must set against this the kind of terrain across which these iron birds flew.

For instance, I doubt whether any pilots in the world had a tougher job than did the Chinese and American crews who flew the Lend-Lease C-47 and C-53 twin-engined transports over the "Hump." Both passengers and supplies had to travel this route during the later phase of the war, and on it many 'planes and many lives were lost.

The "Hump" was the name given to the mountain wilderness lying between South West China and India. In places the peaks were not far short of 20,000 ft. in height, and in bad weather the machines encountered high winds, ice and snow, and giddy air-pockets that made the stoutest stomach sink. Sometimes one saw nothing of the ranges beneath; but the first time I crossed it going out to India I was lucky. Before the clouds closed in beneath us I saw the Burma Road swivelling over the mountains and the great range overlooking the old city of Tali and its lovely lake.

Breathing became difficult as we climbed higher; an elderly man in a seat in front of me was given an oxygen mask. It grew colder as night came on. Nor did it warm up until lights from the villages of Assam appeared below, and the pilot switched on his lights to make a landing on the Dinjan runway, 500 miles from the Kunming airfield. I climbed from the 'plane into the dark oven of tropical India, into a night that was alive with the noise of insects.

Mine had been a pleasant enough journey. Yet, of the 13,000 passengers who crossed the Hump in 1944, I met more than one who remembered the trip with horror, and had not got over his surprise at finding himself still alive.

This route between India and China was only the most notorious of China's air routes, which during the war radiated from Chungking, the heart of Free China, out to the borders of the continent and beyond. Since 1945 they have spread out from other major cities.

Since the Chinese National Aviation Corporation was inaugurated in 1929, Chinese business men and officials have made full use of the 'planes that have been available. By 1944 C.N.A.C. machines were carrying 180 times the number of passengers they had handled in their first year. By that time, too, the Central

A Chinese freight plane is loaded with medical supplies at Kunming. Photograph by J. Skeel.

Air Transport Corporation had been established from a reorganised Eurasia company that German capital had helped to finance. The C.N.A.C. and C.A.T.C. between them set up regular services to link the principal cities. Yet in 1948 there were still fewer than 100 'planes all told for commercial use, about half of which were flying daily.

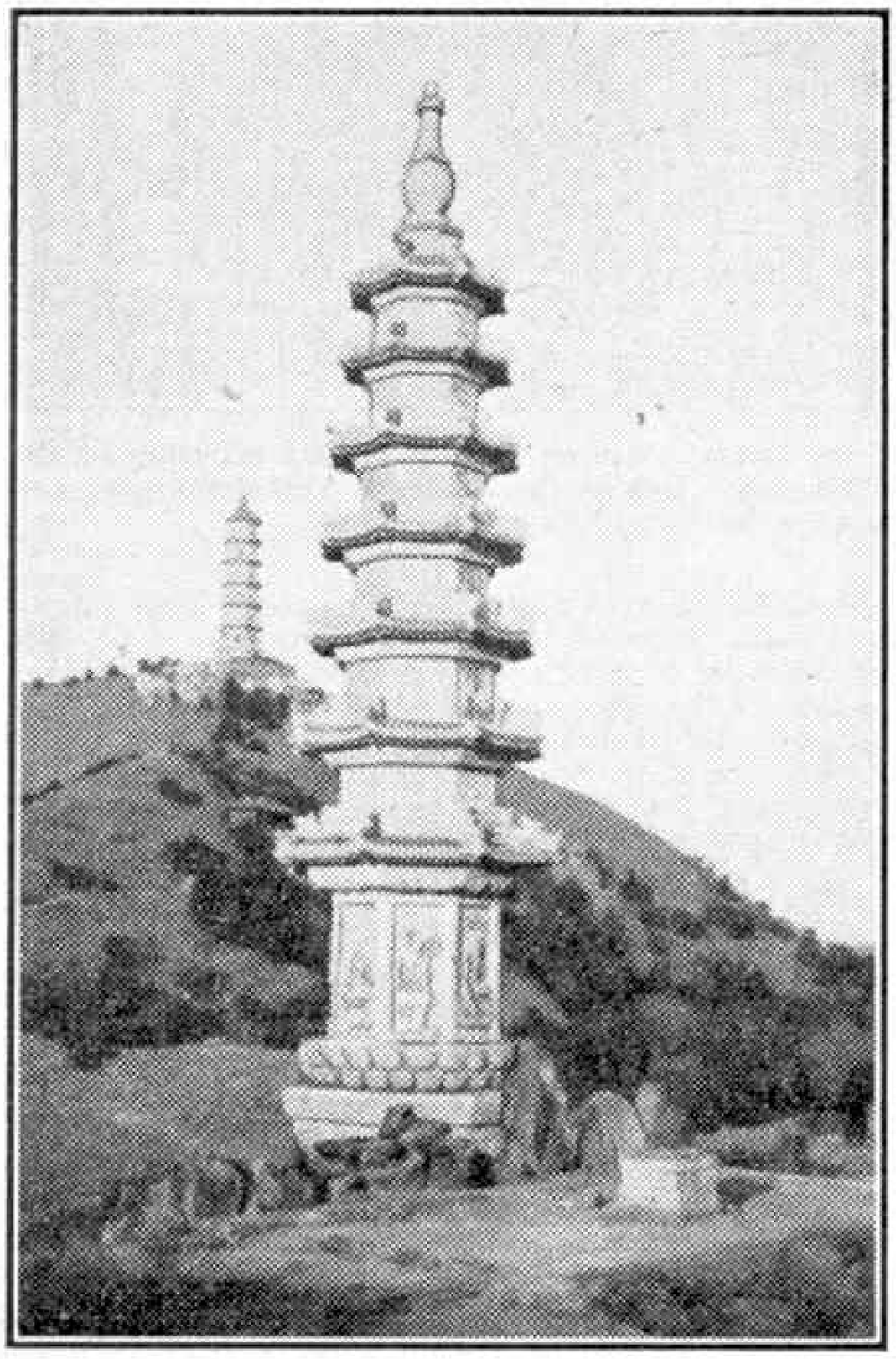
The approaches to some of China's airfields were memorable. I vividly recall the one at Chungking that is built on a long flat island in the Yangtse River. This island, called Shan Hu Pa, disappears beneath the floodwaters in the rainy season and the 'planes then use another landing ground.

On the afternoon when the 'plane from Kunming in which I was travelling arrived the island was fortunately there. For a long time I could not see it from the window, for the hills about Chungking were grey with mist and low cloud. The machine dropped suddenly into the hills and between them into the valley made by the river. It dropped still lower so that I could see the bamboo houses propped against the slope of the river bank and the junks in the water. Then the shingle of the island was beneath us, and the rock slabs of the landing strip.

Landing on the Kweilin airfield was like coming down into a huge roofless mouth inside a rim of giant fangs. The "fangs" were the weird limestone hills of beautiful Kwangsi Province, which jut up sharply from the plain and give every horizon a sharp, saw-like edge.

One Christmas I went by air to Peking, perhaps the loveliest city in the Far East. The C.N.A.C. 'plane on which I left Nanking had "bucket" seats and would not have been comfortable even in milder weather. But to add to our discomfort the door had not been properly shut and an icy draught kept us company to Tsingtao. Even with the door tightly shut, the second stage of our journey into the blue cloudless winter skies of North China was cold enough. Yet all discomfort was forgotten when the velvet blue-grey slopes of the Western Hills outside Peking came in sight, and our 'plane circled the hilltop where the slender pinnacle of the Jade Fountain Pagoda pointed skyward before dropping towards a runway powdered with snow.

Bird's-eye views of China were denied to those travellers who criss-crossed the trails and rivers of this great land in bygone centuries. And even for the modern air traveller, the Earth is all too frequently veiled by cotton-wool clouds.



The slender pinnacle of Jade Fountain Pagoda tells the traveller he is in sight of Peking.

Railway Notes

By R. A. H. Weight

"Britannia" Class Locomotives Under Test

By invitation of the Railway Executive I was recently privileged to observe at close quarters the testing and recording of the performance, on the road as well as on the Testing Plant at Rugby, of two of the new standard class "7" 4–6–2, two-cylinder locomotives of the "Britannia" class.

No. 70009 "*Alfred the Great,*" hauled the 10.30 a.m. Liverpool express from Euston down to Rugby with a dynamometer car, the train of 15 coaches in all weighing about 510 tons full. It was a rather badly delayed run on account of slowings for permanent way repairs and signal checks, though these gave an opportunity for No. 70009 to display notable powers in the way of acceleration and hill climbing. Examples were the attainment of 54 m.p.h. up rising grades after a severe slack at North Wembley; the maintenance of round about 64 m.p.h. up to Tring; and a rapid recovery along a slightly uphill course, following an almost dead stand at Weedon. In this recovery 1250 h.p. was being exerted, the regulator being then fully open, with the valves cutting-off at 32 per cent. of the piston stroke.

Engine, dynamometer car and the special portion conveying the guests were detached at Rugby. For the return run to London they were attached in front of a Birmingham express, when the loaded weight behind the tender was 470 tons. After a slowing for track repairs at Weedon, a very fast run was made, with an average of 72½ m.p.h. over the 54½ miles between Roade and Willesden, which included maxima of 80 and 83½ m.p.h. respectively near Castlethorpe and Kings Langley, and a minimum of only just below 63 m.p.h. at the summit of the Tring rise. Willesden, 77¼ miles, was passed in 75½ min., and but for a signal delay outside Euston the whole of a 10-min. late start, plus 4 min. lost at Weedon, would have been recovered. In actual fact we were only slightly behind booked arrival time at the terminus.

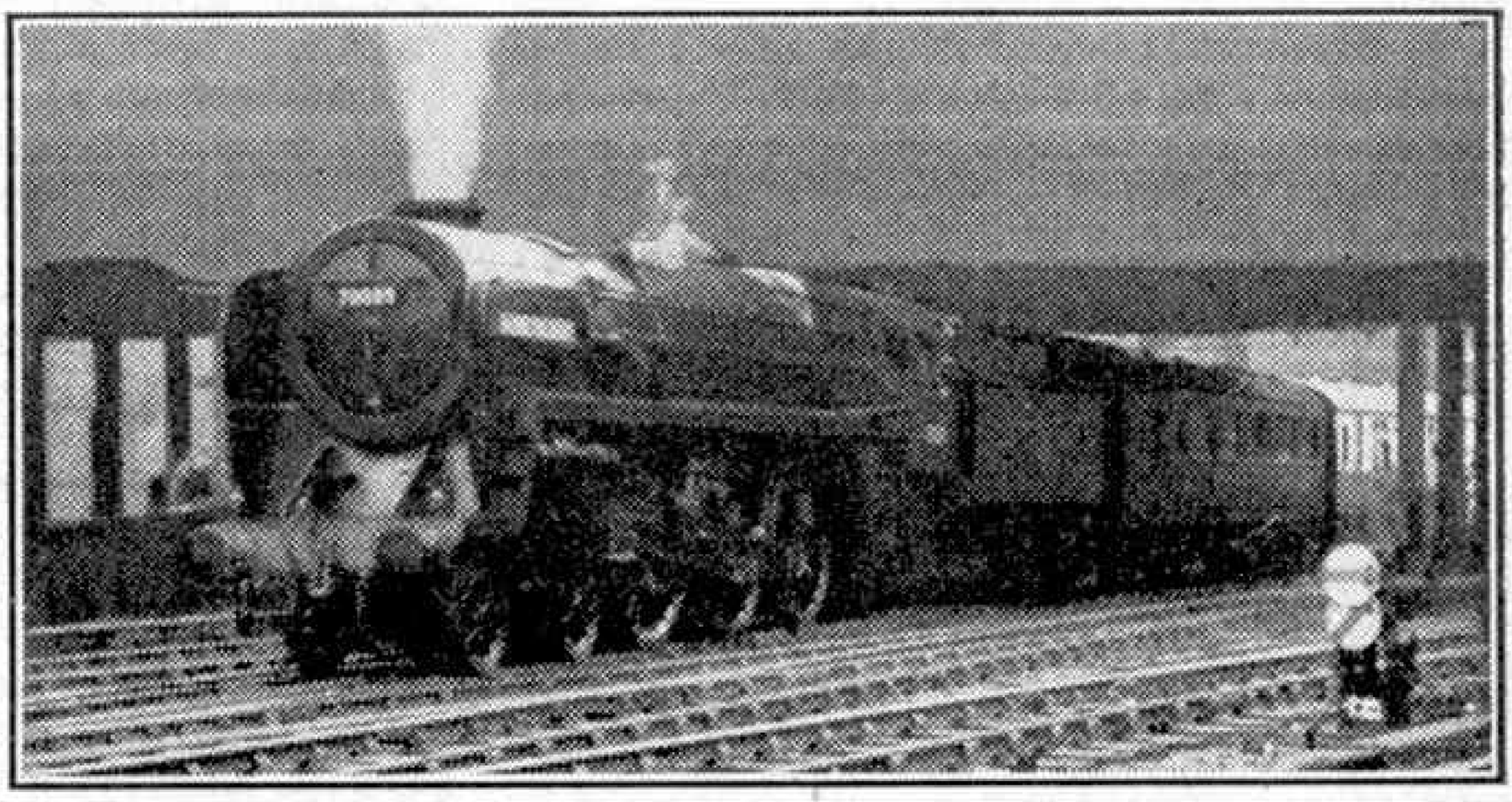
During a considerable portion of each run I was able to travel in the dynamometer car, which was connected by telephone with the engine footplate. Thus I was able to observe the technicians recording the speeds, drawbar pull, boiler pressure, positions of regulator and reversing gear and other details which provide a vivid continuous picture of the performance of engine and train. "*Alfred the Great*" had to be worked fairly hard and there was by no means always the maximum steam pressure available, but the performance was first-rate.

On the road it is impossible to secure the constant and unvarying conditions which absolutely accurate locomotive testing requires. These can only be ensured on a stationary Testing Plant such as the very fine installation of this kind at Rugby. There, between our journeys, we were thrilled by watching No. 70005 "*John Milton,*" with only driving wheels and motion moving, simulate continuous climbing of a steep 1 in 90 grade with a 500-ton load and work up to 27½ m.p.h. It was exerting about 1260 h.p. at the wheel rim with regulator wide open and 40 per cent. cut-off. Frequently coal was fed to the white-hot fire from a hopper behind the engine footplate, as no tender is attached during such trials. Without stopping, the rate of steam admission was changed and the test conditions altered to represent a 500-ton load on the level. Speed gradually increased to the equivalent of 76 m.p.h. with the exertion of 1550 h.p.

In the glass-fronted control room one obtains a grand view of the whole proceedings, as well as of all the intricate recording mechanism in use by expert engineers and their assistants, providing invaluable information of present and future importance to locomotive designers and operators. A full-power trial ended the fascinating demonstration, which included instructive explanations by Mr. R. A. Riddles, C.B.E., Member of the Railway Executive, and Mr. D. R. Carling, M.A., Superintending Engineer at the Testing Station.

National News Items

It has been decided not to perpetuate the B.R. blue livery of the largest passenger engines as this shade has not proved completely satisfactory in service. Some existing stocks of blue paint may be used, but in future a dark green finish is to be standard for all principal passenger or selected mixed-traffic locomotives.



B.R. 4-6-2 No. 70009 "Alfred the Great" leaving Euston on the occasion of the Rugby test trip referred to on this page. Behind the tender is a dynamometer car. Photograph by W. J. Reynolds.

The new coaches and other passenger train rolling stock are numbered in series according to type, but are allocated to meet requirements among the various Regions. The Regional indication is by a letter alongside the number, as in the case of much of the carriage stock of company origin.

Standard class "4" 2–6–4Ts are coming into service from Brighton, numbered 80010 up.

London Midland Locomotive Notes

No. 46202 is to be converted to an ordinary "Princess Royal" type of 4–6–2 with Walschaerts gear. It was built in 1935 as an experimental non-condensing turbine locomotive, and became known as the "Turbomotive." It has performed a considerable amount of good work but in view of heavy repair costs this system of propulsion is not being continued.

New locomotives lately placed in service include B.R. class "7" 4–6–2s built at Crewe for other Regions, Nos. 70004–19; B.R. class "5" 4–6–0s built Derby, Nos. 73001–2 (17A Derby), and Nos. 73003–4 (15C Leicester). Other new engines are class "5" 4–6–0s, L.M.R. design with Caprotti valve gear and roller bearings on all axles, Nos. 44686–7 (9A Longsight) and class "4" 2–6–0, L.M.R. design Nos. 43112–3 (23A Skipton), Nos. 43114–5 (19A Sheffield) and

A pleasing Southern scene. No. 1732, one of the few remaining Wainwright 4-4-0s of class D, on a Ramsgate express near Chislehurst. Photograph by D. L. Bradley.

Nos. 43116-7 (20A Leeds). These, like the previously-mentioned class "5" engines, were constructed at Horwich.

Two additional 350 h.p. 0-6-0 diesel electric shunters are Nos. 12088-9 at 3D, Aston (Birmingham). Some W.D. 2-8-0 freight engines have been transferred from the Southern Region to the West Lancashire area.

Locomotives withdrawn include more of the class "4" Midland Compound, class "3" and class "2" 4-4-0s, "7F" 0-8-0s, and various tanks.

Fine Runs on the Southern

"West Country" 4-6-2 No. 34037 "*Clovelly*," stationed at Plymouth, hauling the through 10-coach 350-ton Brighton-Plymouth dining car train from Salisbury, gave a lively performance. Over the steeply-graded South Western main line it covered the 88 miles to Exeter, Central, in 2 hrs., including four stops, and improved upon a tight schedule. Speeds were 74 m.p.h. at Gillingham, 79 before Axminster stop, and 81 near Broad Clyst on the descent from Honiton towards Exeter. The speed at the top of the long 1 in 80 Honiton climb was 25 m.p.h.

From Brighton to Salisbury "U1" 2-6-0 No. 31891, did well on a less exacting schedule; a through portion from Portsmouth was attached at Fareham. It is interesting to learn that new L.M.S. type 2-6-4Ts have operated Brighton-Salisbury runs successfully.

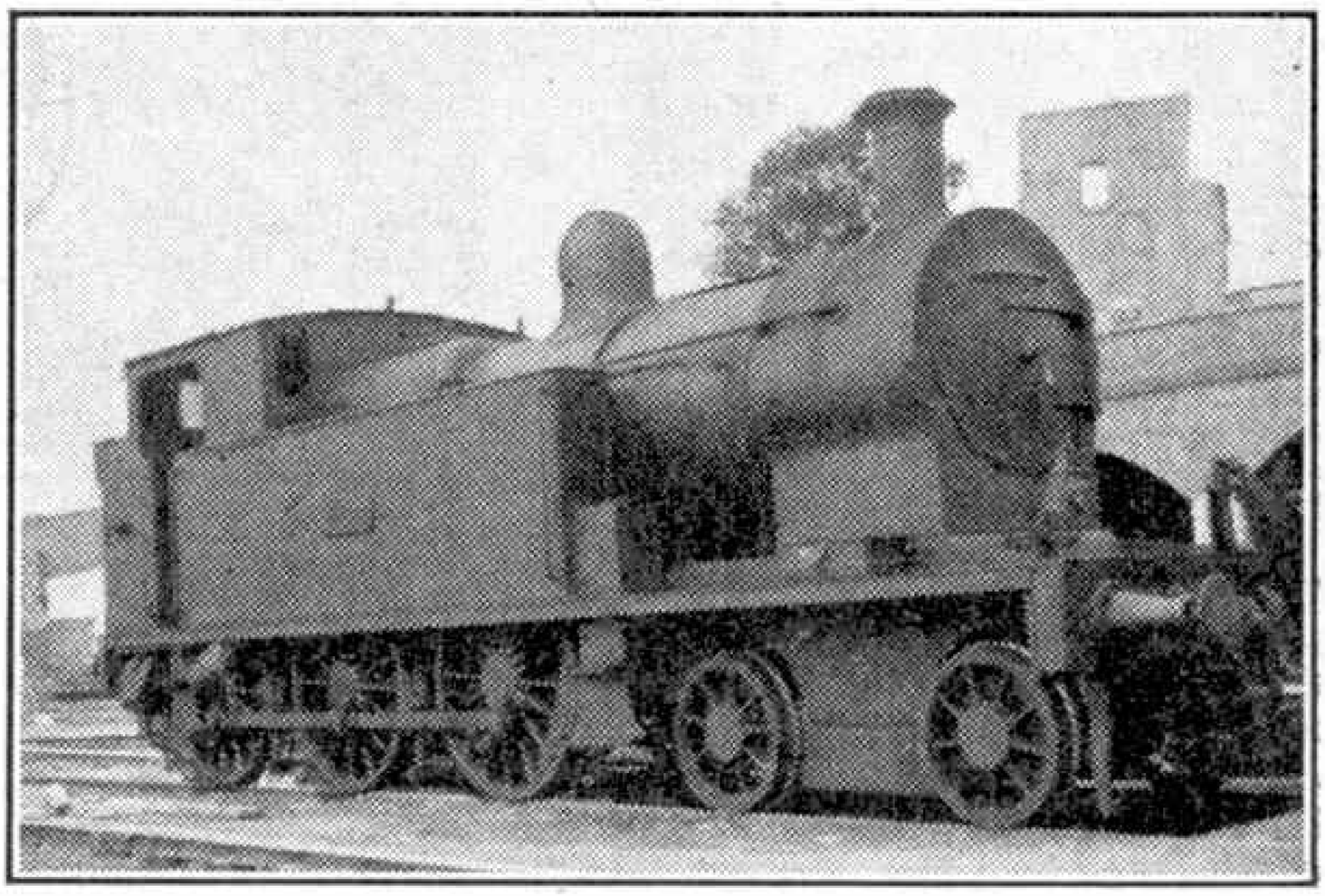
On the evening semi-express from Exeter to Waterloo, "West Country" No. 34028 "*Eddystone*," working through with a slightly heavier train, maintained remarkable averages between stops over the sharply undulating route. Even if Honiton bank from the west is not so long, it is a tough proposition following a call at Sidmouth Junction; still we passed the summit at 39 m.p.h. followed later by a maximum near Crewkerne of 78. Salisbury was reached 1½ min. early.

Among various good runs between London and Hastings by the direct steam-operated route of many difficulties, behind "Schools" class 4-4-0 engines, No. 30909 "*St. Paul's*," on a St. Leonards turn, leaving Cannon Street at 6.3 p.m. with about 330 tons, made the fastest continuous descent between Knockholt and Tonbridge that I have ever recorded or heard of. The 13 miles were covered in 11½ min., including an uphill stretch between Dunton Green and Sevenoaks with a top speed (the maximum authorised) of 85 m.p.h. near Hildenborough. Despite signal and permanent way slowings in the London area, the arrival at Tunbridge Wells was easily a minute before time.

On the Romney, Hythe and Dymchurch Railway

A visit to this well organised 15-inch gauge system in S.E. Kent during June last was particularly interesting, as a large party was conveyed over the whole 13½ mile route from Hythe to Dungeness in three special trains. The ordinary early season service was being well patronised. Various kinds of open and closed rolling stock were in service, including what are called the "Pullman" and "Bluecoaster" sets.

Our train was hauled to Dungeness by "*Southern Maid*," one of the original "Pacifics" modelled on the Gresley "A1." For the return journey "*Hurricane*" was in charge. This engine is of the same type, but is now painted blue with the nameplates on smoke deflectors, like the Peppercorn "A1s" on the East Coast route. Six "Pacifics" were seen at work, including "*Winston Churchill*," modelled on a Canadian design and painted brick red. The green 4-8-2 "*Samson*" was under repair at the shed.



A 4-6-0 tank locomotive of the former Cork, Bandon and South Coast Railway, now C.I.E. No. 468. Photograph by J. D. Robertson.

Western Region Locomotives Withdrawn

The following notable engines are included among recent withdrawals: "Saint" class 4-6-0 No. 2932 "*Ashton Court*," "Star" class 4-6-0s No. 4031 "*Queen Mary*" 4033 "*Queen Victoria*" and No. 4040 "*Queen Boadicea*"; "Bulldog" 4-4-0; No. 3444 "*Cormorant*" and No. 3449 "*Nightingale*." No. 2322 of the well-known Dean 0-6-0 class also has been condemned.

The Story of Stained Glass Windows

By Trevor Holloway

THE term "stained glass" as applied to present-day coloured windows is not strictly correct, because for centuries past both "stained" and "painted" glass have been employed in the making of such windows. Although the two techniques are quite distinct, a combination of both methods makes for a window of greater beauty and detail at less cost than would be the case if only stained glass was used.

Stained glass is glass that receives its colour "in the pot," as they say in the trade. This means that there is mixed with the molten white glass a metallic oxide that stains it green, yellow, blue, purple and so on, as the case may be; for this reason self-tinted glass is referred to as "pot metal."

In painted glass, on the other hand, the colour is not *in* the glass but *upon* it, more or less firmly attached by the action of fire. A metallic colour, which has some affinity to glass, is used as a pigment, in the same way as the ceramic colours are used in pottery painting. The painted glass is then put into a kiln and heated to a temperature at which it is on the point of melting, and the colour actually does fuse into it. In the early days painted glass was used chiefly to improve the stained portions of a window; nowadays stained glass is employed to enhance the beauty of the painting.

The Phœnicians or ancient Egyptians are credited with the invention of glass, and legend has it that the discovery arose from crude glass found on the seashore where Phœnician traders were in the habit of cooking their meals, the heat from their fires melting the sand into a crude form of glass. In the British Museum is a specimen of Egyptian blue glass in the form of a lion's head, which was found at Thebes. On its underside are hieroglyphics of Nauntef IX, who reigned about 2,400 B.C.

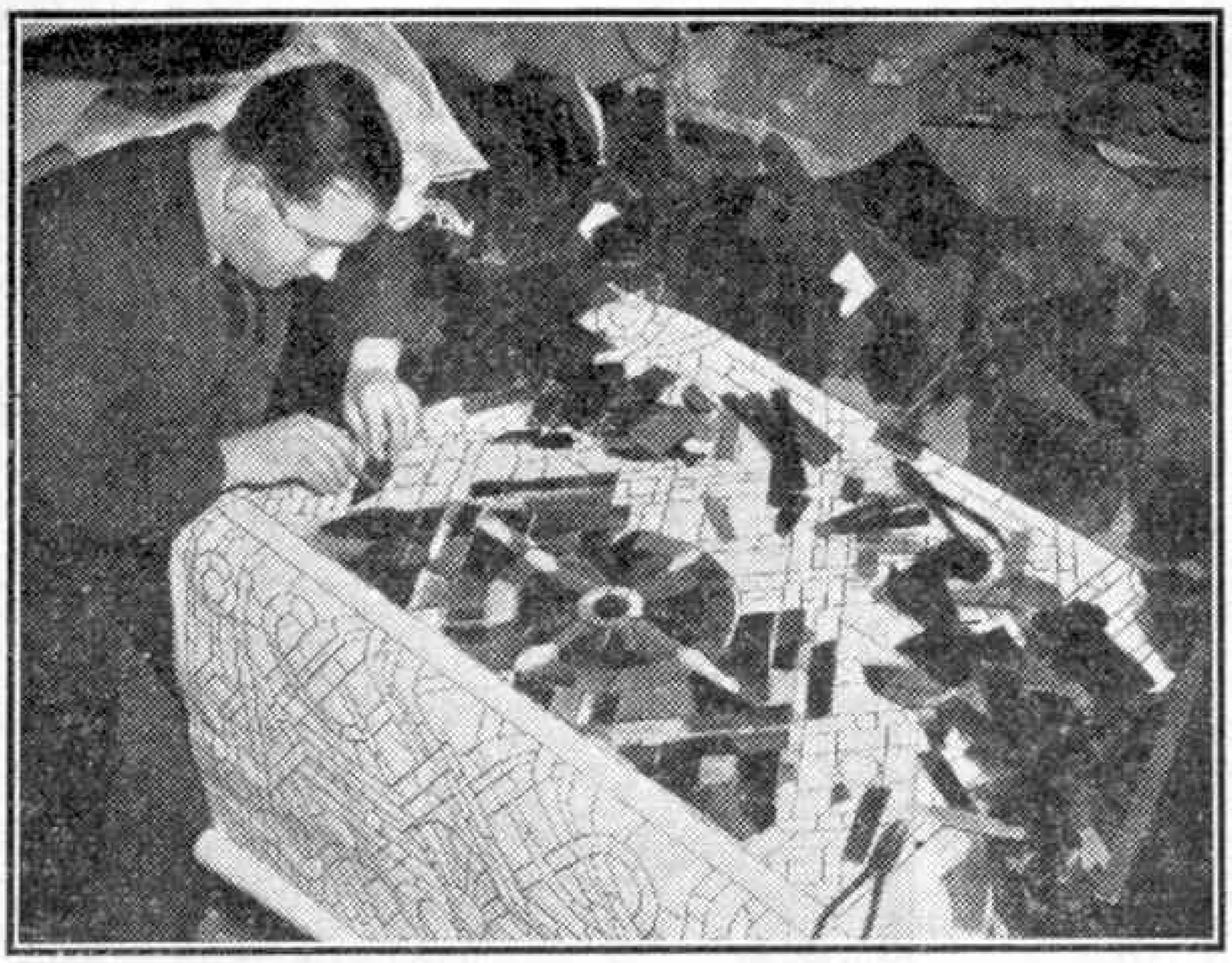
The first mention of glazed windows in this country is in the Saxon Chronicle, recounting that in A.D. 674 the Venerable Bede was responsible for bringing glass to England, and that six years later the Abbot of Wearmouth imported skilled glaziers from France. We read also that in A.D. 709 St. Wilfrid glazed York Minster. These windows were probably of plain glass, but an historian of the 6th century recorded the insertion of coloured windows in the Church of St. Martin of Tours, in France.

The artist paints in the details of a stained glass window.

It is interesting to note that the first we hear of an English artist in glass concerns a man named Edward, who was appointed Master Glazier at Windsor in the year 1242. A document of that period records the rates of wages paid to craftsmen engaged in the making of coloured windows: "Those who work on the drawing of images, 1s. per day; for cutting and joining the glass, 7d. per day; to glazier boys (for grinding colour) 4d. per day."

The fine east window in York Minster was the work of a 14th century craftsman, John Thornton, a glazier of Coventry. His contract stipulated that he was to receive for his work 4s. a week, and if he executed his work truly and perfectly and within three years, he was to have £10 more.

Before the widespread use of painted glass, the early glaziers built up their windows entirely of a jig-saw of white



Cutting pieces of coloured glass to fit into the "cutline" pattern of a window, traced on a linen sheet.

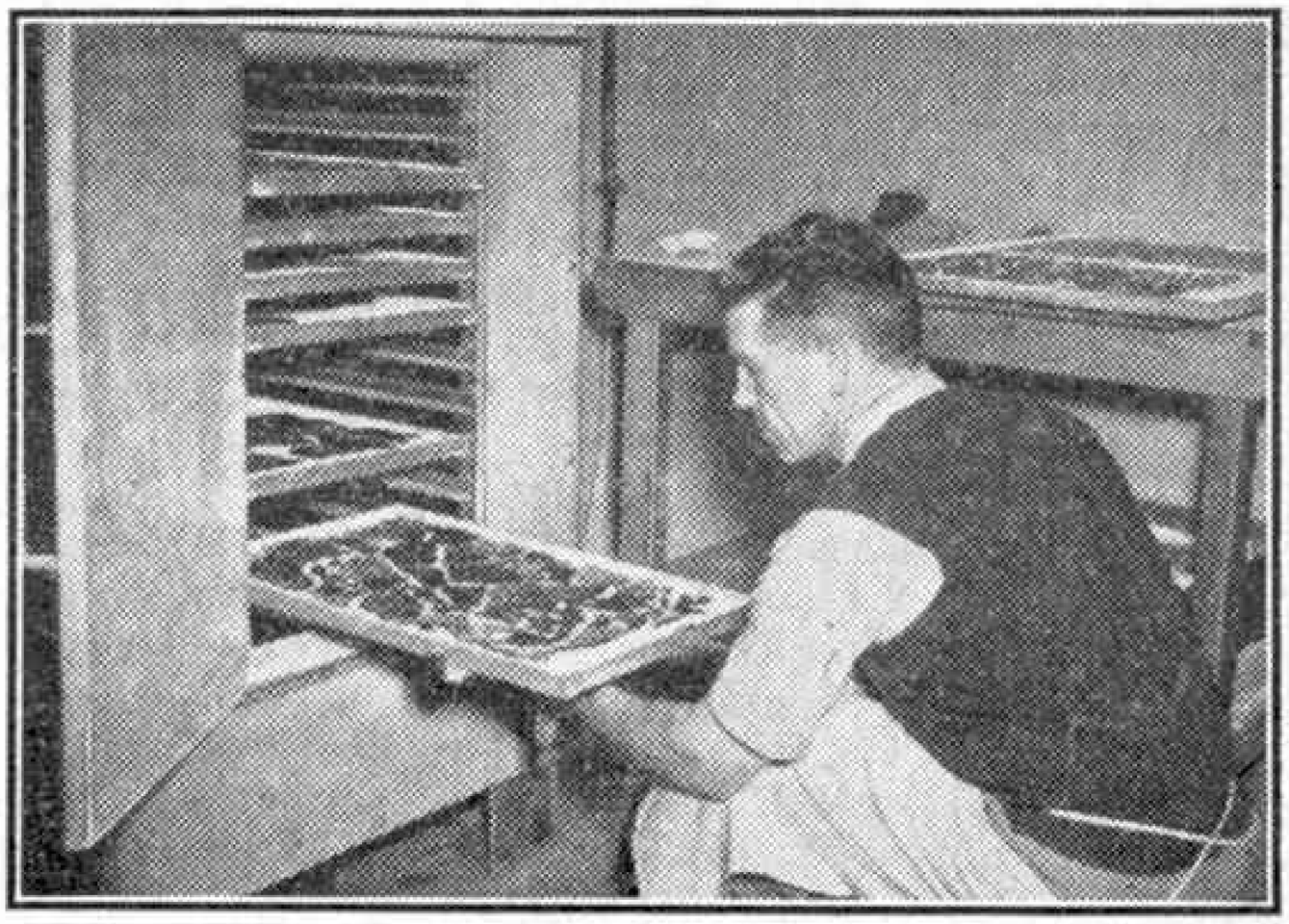
and coloured glass, using a minimum of brown enamel for adding shading and small details. In a figure window, for instance, each garment would be cut to shape from glass of appropriate tint, and only the folds of the drapery indicated by brushwork. In like manner, the foliage of a tree would be cut out of green glass and its stem or trunk out of brown, so that only the forms of the leaves and their veining had to be enamelled in. At this period, all glass cutting had to be done with a heated iron, for the diamond as a cutting tool was unknown.

It was in the 14th century that a major advance was made in the art, namely the discovery of a transparent yellow stain. It became known that if a solution of virgin silver was applied to the surface of the glass and burnt in, it would produce a pure golden stain. This stain is quite indelible, and can vary from the palest citron to a deep gold, according to the amount of silver and the heat of the fire. Actually, it is still the only transparent stain that glass will assimilate after manufacture, and with it white glass can be made to glow with golden decoration in such strength or restraint as the craftsman desires.

Shortly after this discovery came another innovation of major importance. From early times glaziers had practised what was known as "flashing," that is coating say a white glass with ruby, or perhaps ruby over blue. It then occurred to the craftsman to etch his fine detail through this surface coating, thereby obtaining perhaps a blue pattern on a ruby field, and so on. This etching away of a surface colour was originally accomplished with the aid of a flint wheel, but nowadays fluoric acid is employed.

It was these two advances that made possible the emblazonment of heraldry upon glass. Hitherto, the cumbrous method of cutting each heraldic charge out of separate pieces of glass and leading them together had frustrated all attempts at reproducing arms in their proper colours in a window.

Before passing on to a brief description of how a coloured window is made to-day, it is interesting to note that the colours in a window never fade, but grow richer and more sparkling with the passing of time. This is partly due to the fact that with age the glass becomes corroded by various deposits from the lead, iron or stonework in which it is set, as well as by growths of minute lichens. Curiously enough, instead of "dulling" the glass, these deposits enhance it with a mellow beauty.



Painted glass is heated in a kiln in order to fuse the pigment with the glass itself.

Let us suppose your church or school has decided to erect a stained glass window in memory of some local celebrity. The artist of the firm undertaking the work will first prepare and submit a small-scale water colour of the proposed window. If the design is approved, a full-scale copy of the water colour is made in one colour. This cartoon, as it is called, is really a complete map, so to speak, indicating all the essential features of the design.

The cartoon is then passed on to the glass cutter. He places it down, fully opened flat, upon his bench, and then covers it with a sheet of transparent linen. Using a brush dipped in a special ink he proceeds with infinite care to trace the lines of the cartoon beneath, which are visible through the linen. The lines he traces will indicate the various shapes the respective pieces of glass shall take, as well as the positions of the lead strips required to hold the sections of glass together. It will be appreciated that the slightest inaccuracy at this stage would cause grave complications later, when the hundreds of pieces of "jig-saw in glass" are ready for assembling. The sheet of traced linen is known as the "cutline."

The monochrome cartoon is now removed, leaving only the cutline on the bench. With the miniature water colour beside him, the glass cutter begins the intricate task of selecting appropriately coloured pieces of glass, and cutting them to shape as indicated by the cutline. Here, again, absolute accuracy of workmanship is called for, particularly so in the case of a large window incorporating much small and intricate detail, as thousands of separate pieces of glass may have to be cut.

The work now passes to the glass painter, an artist of high skill. First he lays the cutline on his bench, then over it lays a framed easel of plain white glass. He now assembles on the plain glass all the pieces of cut glass he has received from the glass cutter. Slowly he builds the gigantic jig-saw together, following the lines of the cutline underneath the sheet of plain glass.

This done, the artist fixes each and every piece of shaped glass securely to the sheet of plain glass by means of a preparation of heated wax. This means that the glass easel, and the pieces of glass adhering to it, can be raised to an upright position, thus enabling the artist to set to work painting in the details of the design.

When the painting is completed, the easel is laid flat once more, and the painted glass is placed on shallow trays and conveyed to the kiln. There, as we have already mentioned, the heat permanently fuses the pigment with the glass.

From the kiln, the work passes to the glazier again. With the cutline laid flat on his bench he takes up each piece of

A young glazier assembling a window.

glass and places it in its exact position. Then, with strips of lead grooved on each side to hold the glass, he fits all the pieces together, soldering all joints to keep them intact. Finally, to make the work thoroughly sound, firm, wind and weather proof, he works into the interstices of the lead and glass a cement of putty-like composition which, when it hardens, stiffens the work and renders it permanent for centuries to come. The window is then ready for despatch and erection in your school or church.

The largest, and probably the most valuable east window in any church in the world is that of Carlisle Cathedral. It has been described as the finest example of decorated tracery existing. The lower portion of the window contains no less than 263 circles. A close rival is that in York Minster, measuring 75 ft. by 32 ft., which has 117 panels showing Bible scenes.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions which will be indicated, these should be ordered through a bookseller.

'ON RAILWAYS AT HOME AND ABROAD"

By P. RANSOME-WALLIS
(Batchworth Press. 15/-)

The author became a railway enthusiast as a boy, and he has retained his love for railways, and especially for locomotives, in spite of the fact that he was unable to take up locomotive engineering as a career, as he had hoped. To-day he is well-known as an expert railway photographer. His book is full of good reading that reveals a wide experience of all aspects of railways and railway working in many countries.

A good proportion of the volume naturally deals with British railway matters. Here the author gives a general survey of our railways since grouping, and describes vividly footplate trips and other personal experiences of the work of railwaymen. Next he deals with his travels in Europe in search of railway knowledge, and then we get the benefit of his Naval service during the war in compact and interesting stories of locomotive work in West, East and South Africa, in Malaya and in various islands from Newfoundland to Ceylon, and also in Canada and the United States. Steam locomotives are not the only ones that figure in his stories. He relates his experiences of the impressive diesel and electric locomotives of North America, and gives an entertaining account of the "motive power" of the Fintona horse tram of the G.N.R. of Ireland.

The book is amply illustrated, chiefly by excellent reproductions of the author's own photographs.

"AIR APPRENTICE, AIR MECHANIC AND AIR NAVIGATOR"

(Brown, Son and Ferguson. Price 1/-)

This excellent addition to the publisher's Scout Badge Test handbooks, of which it is No. 34, sets out clearly and concisely the qualifications necessary in order to gain a Scout Badge in any of the above three categories.

The chapter on the Air Apprentice Badge covers the picketing and refuelling of aircraft; airfield procedure, rules and regulations; and types of landing grounds. The Air Mechanic Badge aspirant is given the principle and working of the internal combustion engine, and detection of faults, with information on elementary hydraulics and pneumatics, the handling and servicing of aircraft on the ground, airframe construction, and the theory of flight. The section on the Air Navigator Badge explains how to compile a daily record of the weather, and how a weather map is prepared. Map reading, the stars, converting a true course to compass course, and the principles of dead reckoning also are dealt with.

The text is illustrated with many helpful diagrams.

"THE AIRPORT VISITOR"

(Penman Enterprises Ltd. Price 1/6)

There are about 100 civil airfields in the United Kingdom, 34 of them owned or operated by the Ministry of Civil Aviation. This booklet is mainly concerned with the M.C.A. airports at London, Northolt, Prestwick, Liverpool and Blackpool, which have public enclosures and special facilities for people to watch the flying and see for themselves how a busy airport is run.

Other features are a list of airlines operating to and from British airports, and descriptions of civil transport aircraft now in service and new air liners now on their trials. An aircraft logbook lists the registration letters and other details of over 700 air liners flying in and out of British airports, information that will be welcomed by the aircraft "spotter."

Pictures of aircraft and airport scenes, with a map of London Airport, complete a useful publication.

"LOCOMOTIVES OF THE GREAT WESTERN RAILWAY"

Part 1: Preliminary Survey

(R.C.T.S. Price 10/-)

This latest addition to the handbooks compiled by the Railway Correspondence and Travel Society, although described as Part 1 of a series, is in fact complete in itself. Within its 62 pages it traces the development of G.W.R. locomotives, a process unique in its continuity since the earliest days. This story is the more fascinating because of the co-existence over a long period of broad and narrow gauge locomotives, and also because in earlier days Wolverhampton as well as Swindon produced locomotive designs.

In addition to the story itself, and the numerical lists of Wolverhampton and Swindon locomotives accompanying it, there are sections dealing with locomotive liveries and the Swindon engine diagram system, the range of standard boilers, peculiarities of external details and so on. There is also a section on those essentially Great Western features, engine power groups and route colours, and the Automatic Train Control system.

Many illustrations from photographs and three folding tables will be found helpful by readers. The Society is to be congratulated on the production of the book, which can be obtained from the Honorary Publications Officer, R.C.T.S., 18, Holland Avenue Cheam, Surrey, price 10/- including postage.

"THE CENTRAL LONDON RAILWAY"

By B. G. WILSON and V. STEWART HARAM
(Fairstead Press Ltd. 5/-)

The original Central London Railway, now part of the Central Line of London Transport, has been in existence for over 50 years. It set the pattern for subsequent deep-leve "tubes," and right from the start was an electric line, operated at first by separate locomotives. It soon became famous as the "*Twopenny Tube*" because of the uniform fare of 2d., irrespective of distance.

The authors have put together an interesting and comprehensive account of this pioneer line, beginning with a description of London transport conditions in the days before the underground railways. The promotion and construction of the line, and its opening and development are then dealt with, after which we follow its career until it became one of the London Underground group of companies and was extended both eastward and westward, although the complete schemes projected before the war have not been fully realised. The equipment and operating methods of the original company are described and there are interesting illustrations of equipment and a sketch map.

Copies of the booklet are obtainable only from Mr. B. G. Wilson, 40, Edenfield Gardens, Worcester Park, Surrey, price 5/- each, including postage.

"TRAINS OF BRITAIN"

(Ian Allan Ltd. 2/6)

This excellent picture book contains a varied assortment of illustrations showing typical British trains, ranging from the most important expresses to the humble local goods. Steam trains predominate, but electric and diesel power haulage also are represented.

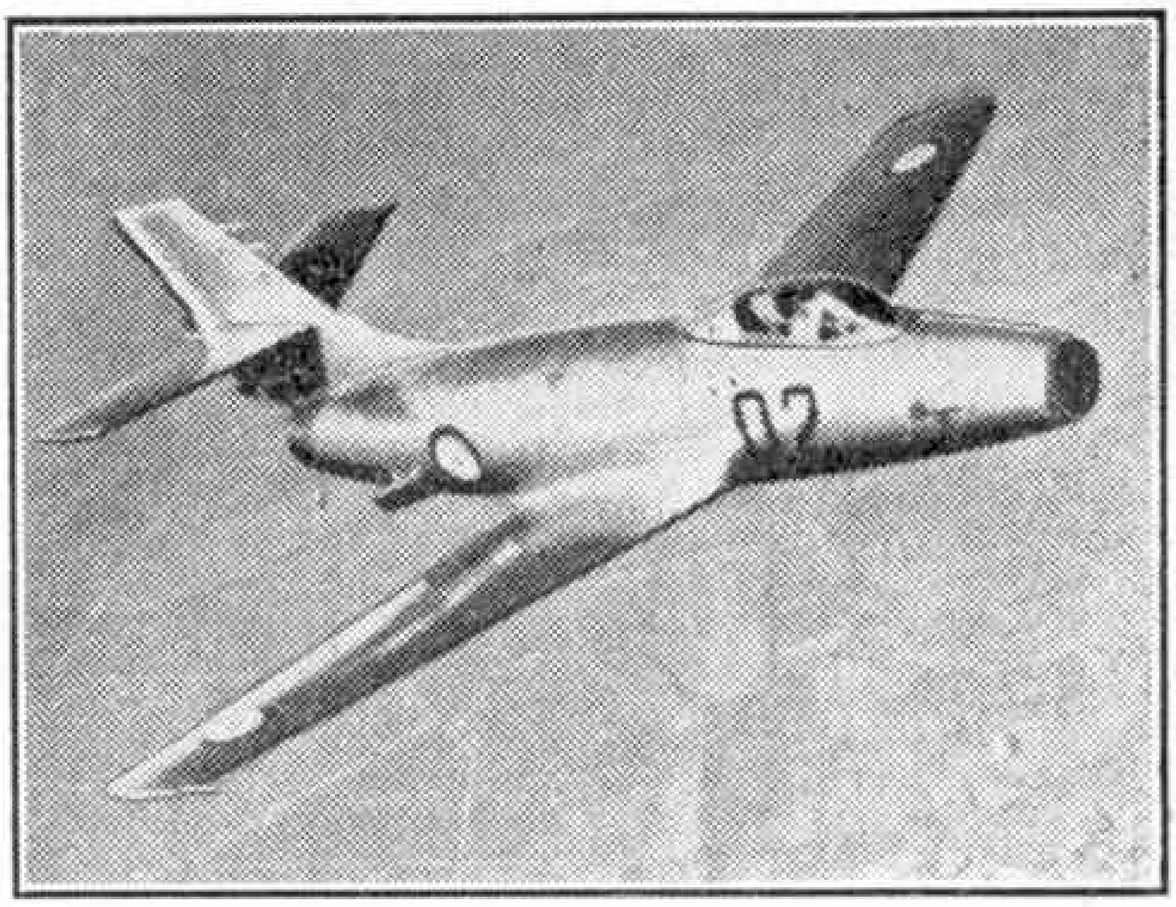
The page size of the book is generous, so that the reproductions are all on a fairly large scale. To each there is a short write-up, giving in concise form details of the train itself, its engine and the scene in which it has been photographed. An attractive coloured cover gives a good start to the book.

The French Aero Show

By John W. R. Taylor

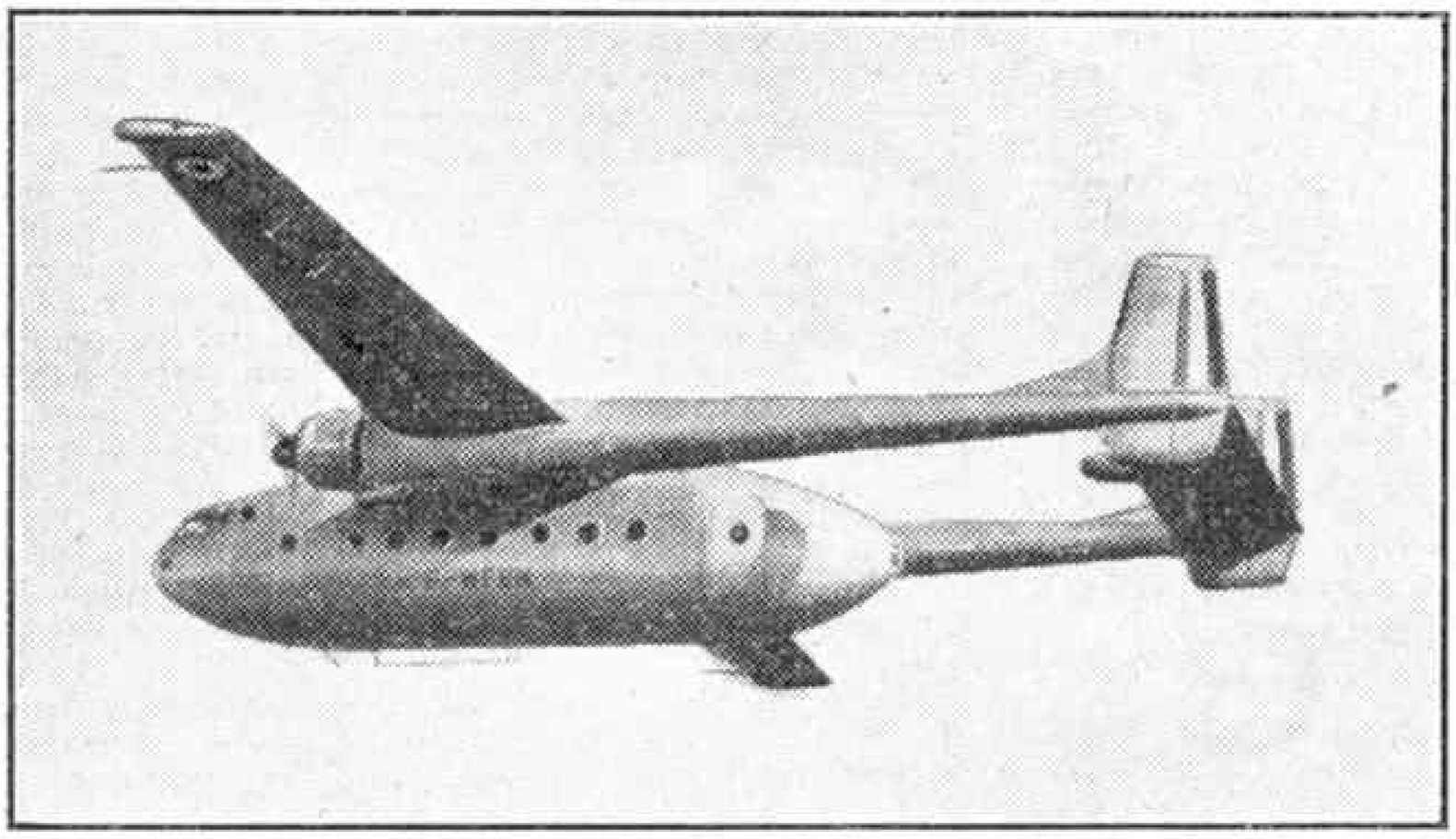
FRANCE is the home of aeronautics. It was there that a young scientist named Pilâtre de Rozier became the first man to fly, in a Montgolfier hot-air balloon, on 15th October 1783; and it was there that Clement Ader made brief hops in his bat-like monoplane *Eole* 13 years before the American Wright Brothers' historic first sustained and controlled aeroplane flight at Kitty Hawk on 17th December 1903. Until about 1910 France remained the centre of aviation progress in Europe, and the world's first aero exhibition and flying meeting were held at Paris and Rheims respectively during 1908–9.

Even in recent years, when aircraft production in France has been small, her designers have lost none of their old skill at producing aeroplanes as advanced and interesting as any in the world. A French aero show can therefore always be guaranteed to provide plenty of attractions, and this year's 19th *Salon de l'Aviation*, held in the beautiful Grand Palais in Paris from 15th June until 1st July, was no exception.



Dassault MD 450 "Ouragan" jet fighter. Photograph by courtesy of Airmondial, Paris.

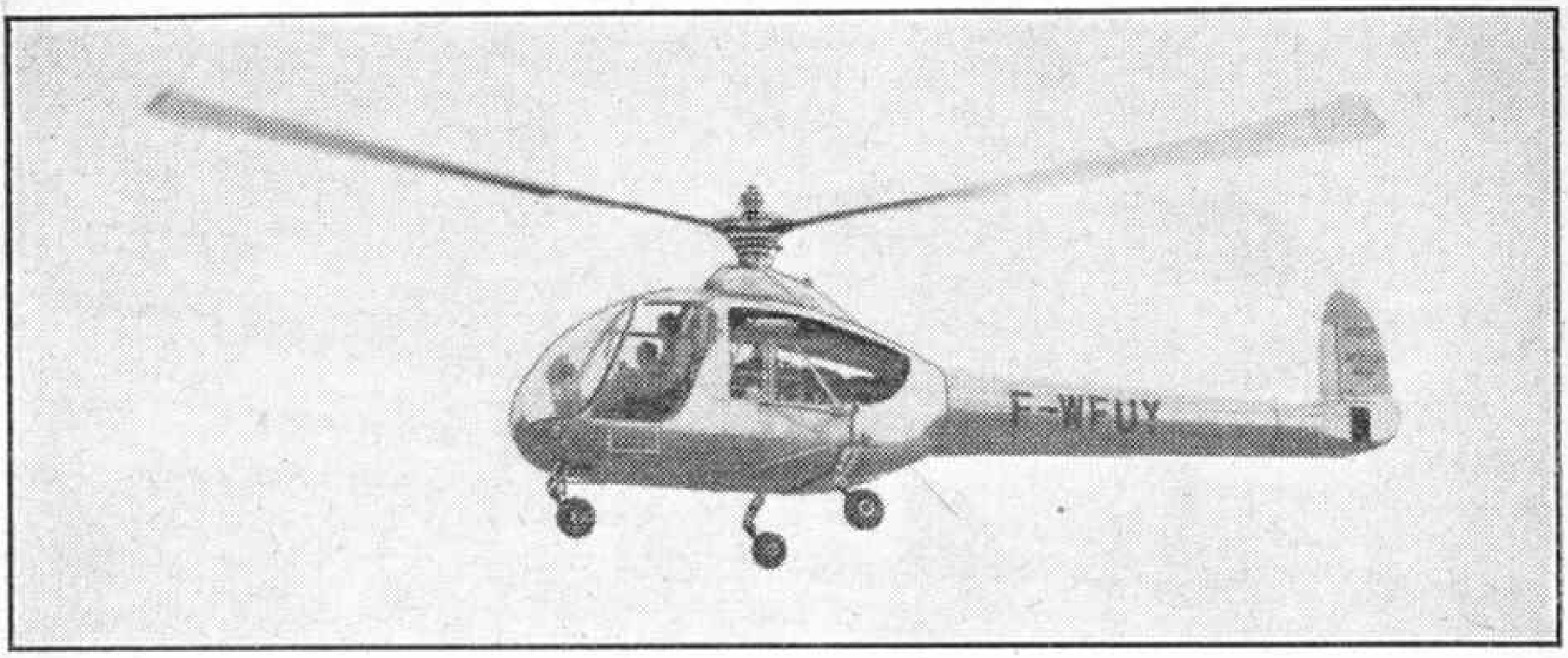
It was very different from our own S.B.A.C. Flying Display and Exhibition at Farnborough. The main object of this *Salon*, as of the first one in 1908, was to bring a cross-section of present-day international aviation equipment to the heart of Paris, for the benefit of anyone willing to pay a couple of shillings to see it. It was a nicely-arranged, decorative show, with a few aeroplanes and lots of fascinating bits and pieces, displayed against a gay Parisian background of flowers, fountains, soldiers in Gilbert and Sullivan uniforms, coloured banners and music. "Farnborough" on the other hand is essentially a technical show, to which technicians from almost every country in the world come annually to see and envy the latest achievements of the British aircraft industry. The public are admitted on the last two days of the display, but "Farnborough" never pretends to be anything but a shop window to attract foreign buyers, with plenty of aeroplanes and no frills.



Nord 2501 "Noratlas" transport. Photograph by courtesy of S.N.C.A.N. Company, France.

It is for that reason, perhaps, that the average British visitor felt rather disappointed on first entering the Grand Palais. There were only 18 full-size aircraft on show, of which nine were of French design. After a time, however, it became apparent that what the exhibits lacked in numbers they more than made up in interest.

Star of the show was undoubtedly the "Ariel" III helicopter, built by the Société Nationale de Constructions Aéronautiques de Sud-Ouest (S.N.C.A.S.O.), which, as its name implies, is one of the big three



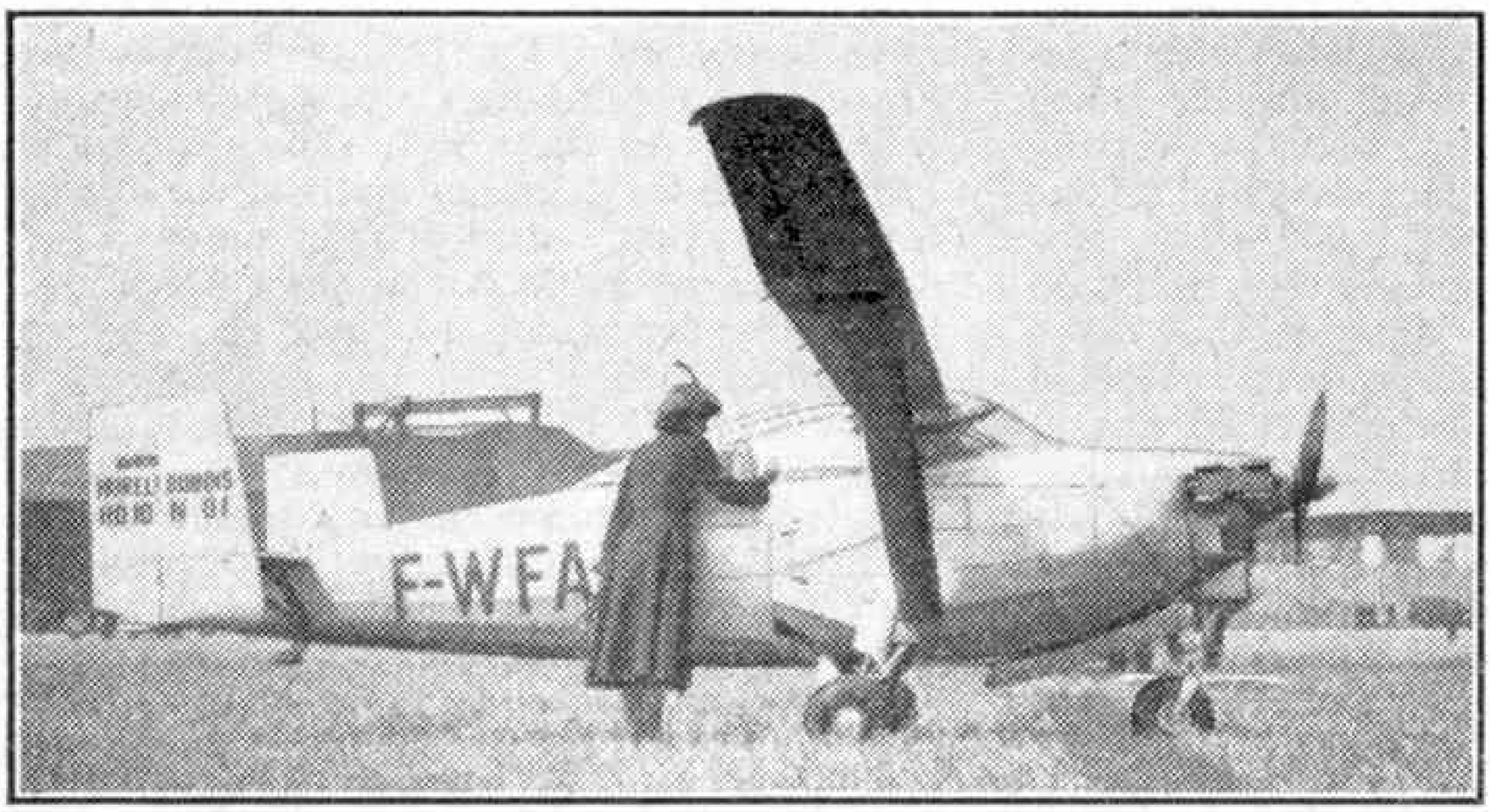
"Ariel" III jet helicopter. Photograph by S.N.C.A.S.O. Company, France.

state-controlled aircraft companies. There were six of them when the bulk of the French aircraft industry was first nationalised in 1937, and each was responsible for taking over privately-owned factories in a certain sector of the country. S.N.C.A.S.O., for example, acquired the former Marcel Bloch, S.A.S.O., U.C.A., Lioré-et-Olivier and Blériot factories in south-western France. But in 1941 the nationalised companies were merged in pairs, so that in addition to S.N.C.A.S.O., there now remain only S.N.C.A.N. (Nord) and S.N.C.A.S.E. (Sud-Est).

The original idea in 1937 was that the nationalised companies and remaining private firms could build military prototypes in competition with each other, but that production orders for the winning types would be placed exclusively with the state-controlled firms. The result of this policy, combined with pre-war political manœuvring in France, was that production faded away and the French Air Force went into action in 1939–40 with a motley collection of warplanes, many of them fit only for the scrap heap.

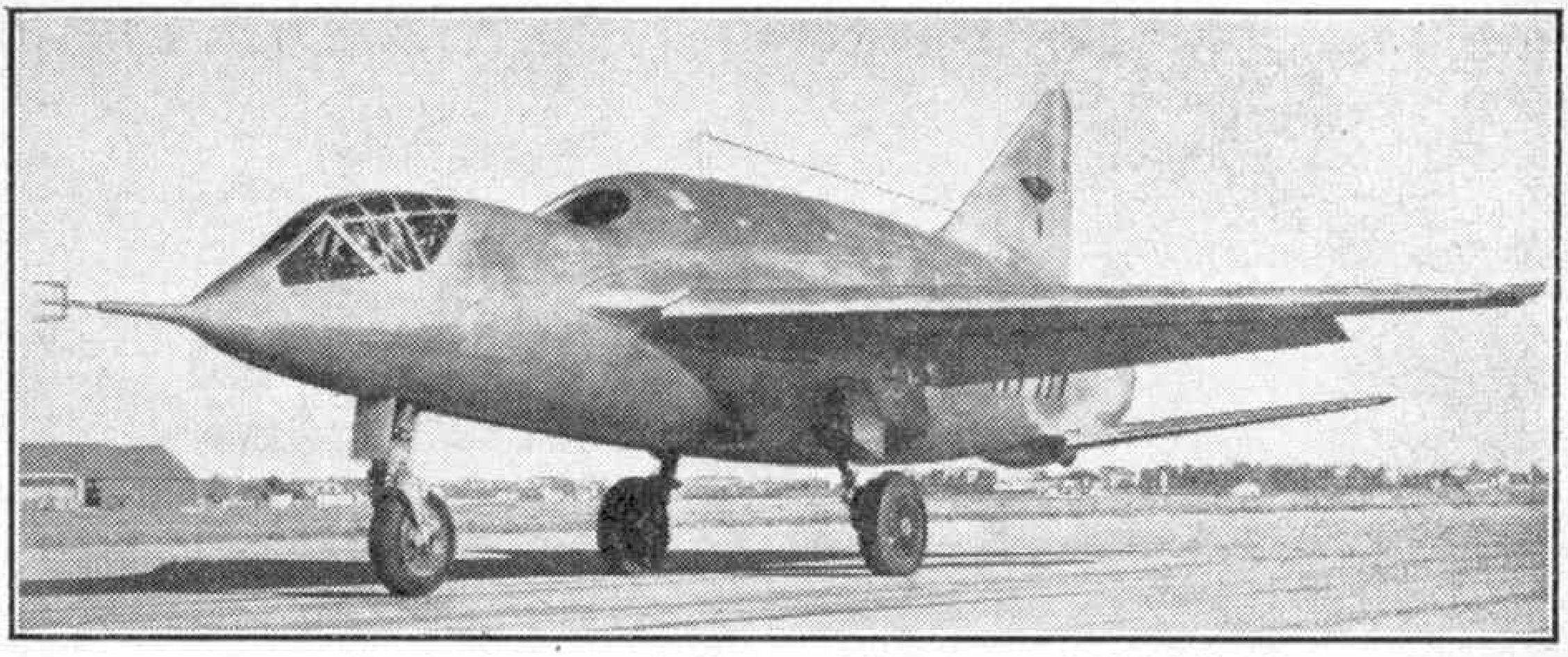
To-day, private enterprise is back in the picture in a big way, despite first-class competition from the reorganised state companies; and on the next stand to the "Ariel" was a photo-reconnaissance version of the "Ouragan" (Hurricane) jet-fighter, 150 of which are being built for the French Air Force by the independent Marcel Dassault Company.

The "Ouragan" is a good clean aircraft in the 600 m.p.h. class, but Dassault have already made it out of date by building a swept-wing version of the same thing, named the "Mystère," which is even better. It looks rather like the Mig-15 and, powered by a French-built Rolls-Royce "Tay," should be in about the same class as the Russian jet.



Hurel Dubois HD10 experimental aircraft. Photograph by J. W. R. Taylor.

Nor is it the only outstanding French military aircraft, for although they were shown only in the form of models or pictures at the *Salon*, the French aircraft industry has in the last few years produced a series of prototypes which bear comparison with any in the world. There is, for



S.E. 2410 "Grognard" jet bomber prototype. Photograph by courtesy of S.N.C.A.S.E. Company, France.

example, the racy, swept-wing S.N.C.A.S.O. "Espadon" single-seat fighter, which can be fitted with a rocket to supplement its "Nene," and has four 30 mm. guns at a time when all the Western Union air forces are still armed with outmoded .5 in. and 20 mm. weapons. Similarly, in the jet-bomber category, France has the unorthodox S.N.C.A.S.E. "Grognard," which is powered by two "Nenes" staggered inside its deep fuselage; and the big S.N.C.A.S.O. 4000, also with two "Nenes," which are built in France by the Hispano Company. Its development typifies the care with which French industry is perfecting its new types, for it was preceded by two half-scale piloted "flying models"—the S.O.M1 glider and the "Derwent"-powered S.O.M2. But, like the "Grognard," its future is uncertain, as France may well decide to follow the example of the U.K., America and Australia by standardising on the English Electric "Canberra."

Standardisation is of course excellent, provided that one chooses the right types of aircraft; and France has already taken steps in the right direction by setting up a "Vampire" production line at one of the big S.N.C.A.S.E. factories. Nor were Sud-Est content merely to build ordinary "Vampires." Instead they have developed a "Nene"-powered version named the "Mistral," which is 50 m.p.h. faster than the standard machine and has a correspondingly better rate-of-climb. It may soon go into production for the French Air Force side-by-side with the D.H. "Venom."

On the whole, however, French military production is tragically small at the present time—a state of affairs which probably results from the argument, common in Western Europe, that it is a waste of time and energy building warplanes when the Americans are giving away "Thunderjets" and B–29s!

The Americans however are not giving away many transport aeroplanes, helicopters and light 'planes, which probably explains why these types were predominant in the Grand Palais. The only full-size transport exhibit was the fuselage of a Nord 2501 freighter, for which the French Government have placed one of their biggest post-war contracts, for a total of 160 aircraft. It is similar in layout to the American Fairchild "Packet," and its spaciousness was put to good use at the *Salon* for housing models and a small cinema in which visitors could see a film demonstrating its suitability for such work as paratroop-dropping.

It is a pity that at least sections of the fuselages of the superb S.N.C.A.S.E. "Armagnac" and S.O. 30P "Bretagne" air liners, and the giant Breguet "Deux Ponts" four-engined freighter, could not have been shown, for they are outstanding among present-day piston-engined transports. All three were shown in model form however, together with a variety of lesser types; and they were also demonstrated in the air at the Le Bourget flying display which marked the end of the *Salon*.

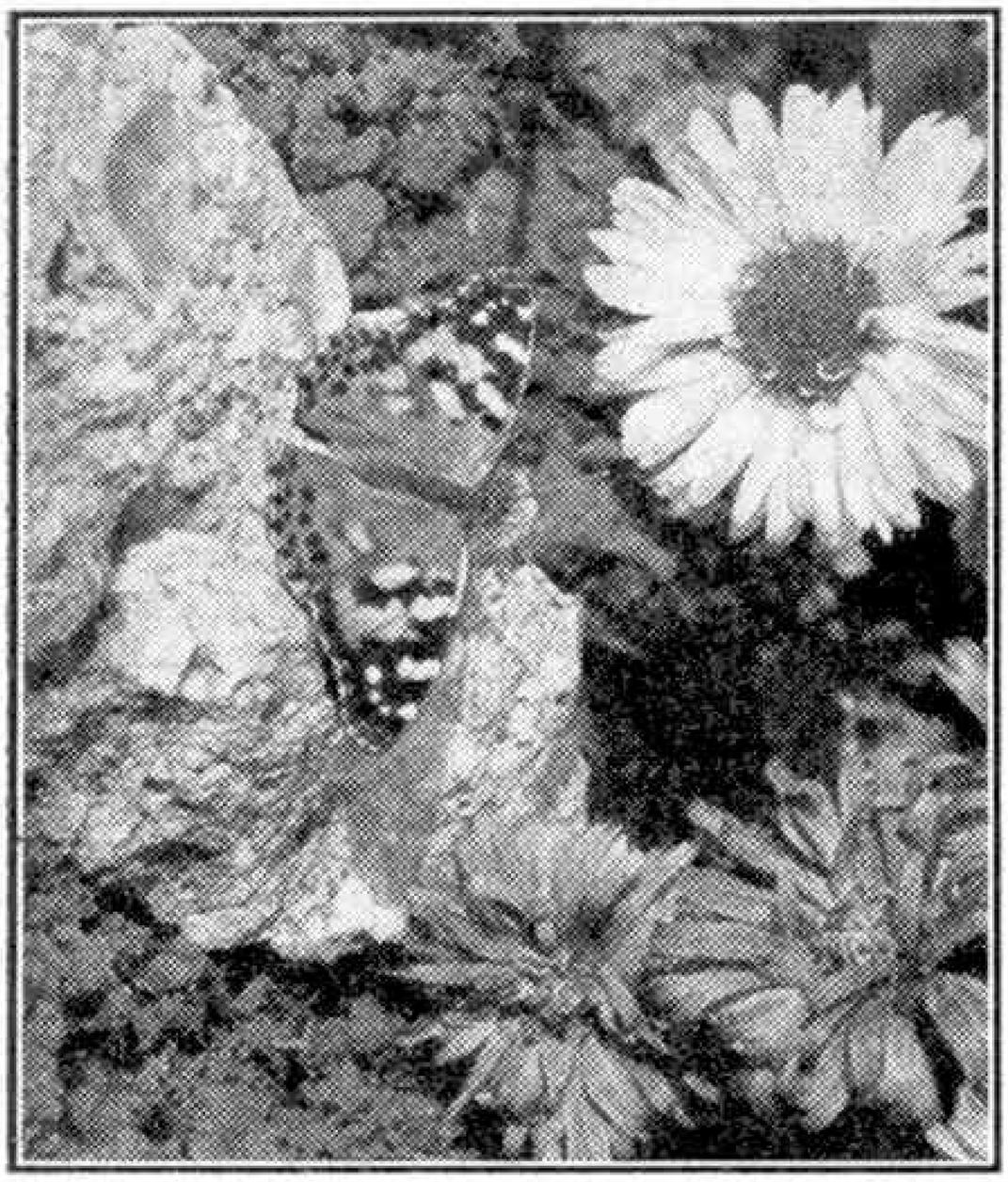
The "Ariel" III helicopter has already been mentioned, but merits a more detailed description as it demonstrates well the ability and imagination of present-day French designers. By getting right away from established principles, S.N.C.A.S.O. have produced not only the world's first turbojet-powered helicopter, but one of the simplest and best. It has no (*Continued on page 430*)

Photography

Outdoor Subjects

By E. E. Steele

THIS month offers much to attract the outdoor photographer. The harsh lighting of midsummer gives place to the softer tones of Autumn, while the changing tints of foliage paint the countryside in glorious masses of gold. So many subjects catch the eye in hedgerow, coppice and wood where the various wild-fruits abound, and trailing bryony berries hang

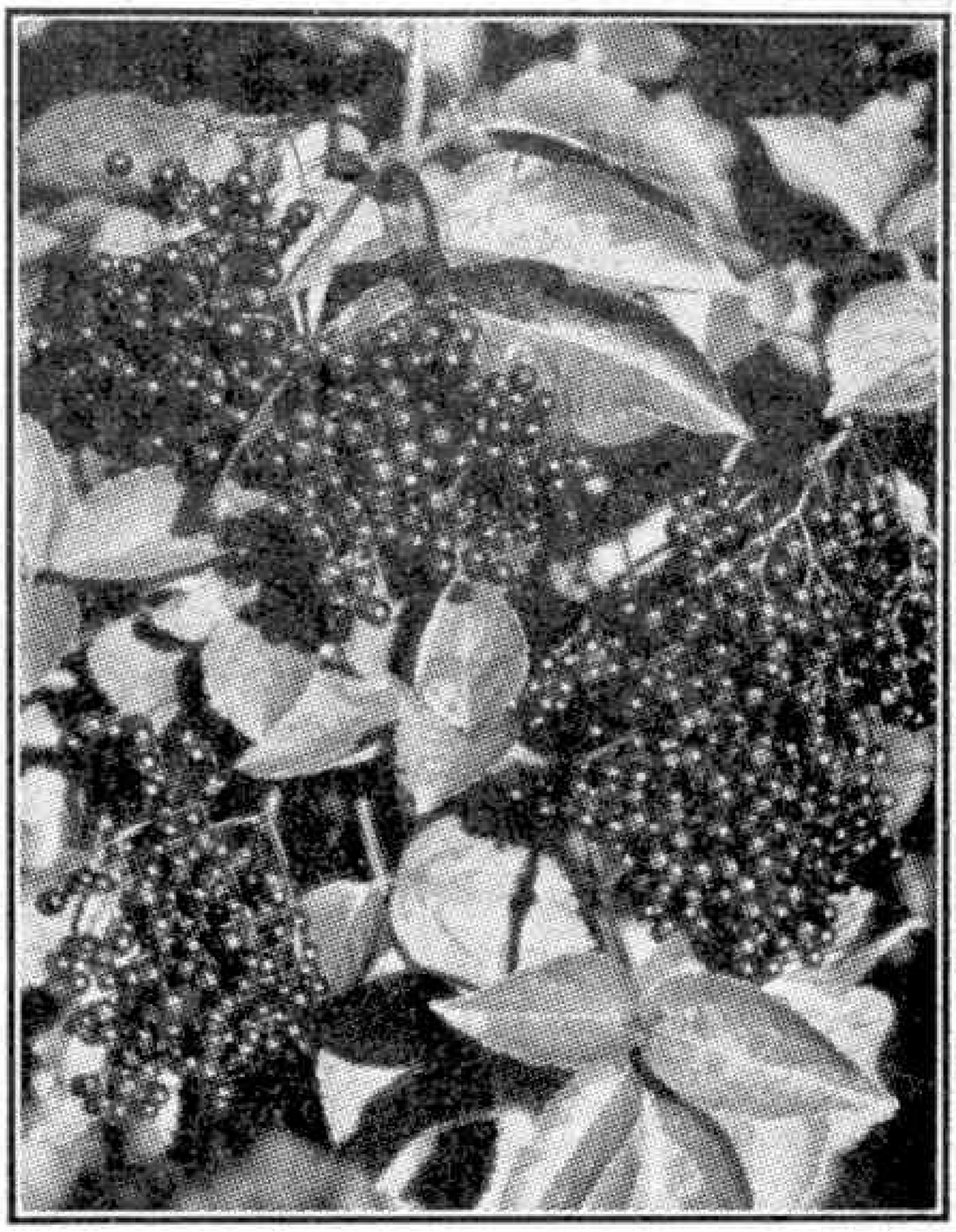


Painted Lady butterfly resting in garden.

in garlands amid the tangle of bramble and rose hips.

Misty mornings create new and charming landscapes, where harsh outlines are softened in grey mist, and spider-webs are transformed into strings of pearls, as the rising sun sparkles on the tiny droplets. This mist disperses quickly, so one must be prepared to rise early and get busy before breakfast. Migrating birds may be seen in vast numbers, stringing along the telephone wires, awaiting the magic call which draws them to distant lands, while other birds are arriving to Winter with us.

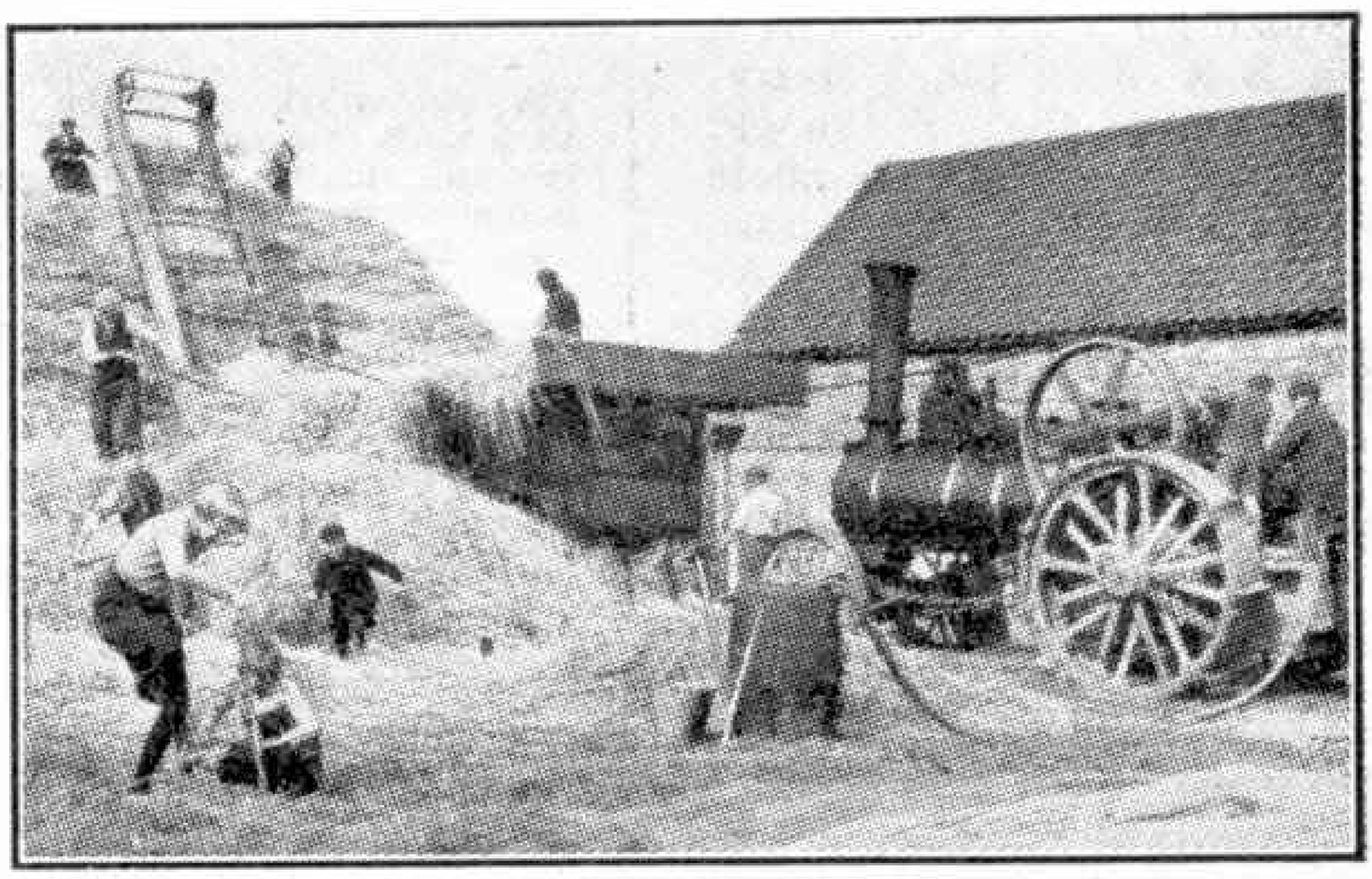
Butterflies of gayest charm haunt the gardens and revel in the late flowers of asters and michaelmas daisies. Drowsy and replete they seem content to bask in the sunshine, and may often be taken by hand. This is certainly the best and easiest time to photograph them, but in order to make close-up shots it is necessary to have some means of bringing the camera to focus at a much nearer point than normal. This is usually accomplished by fitting a supplementary lens to the normal lens, or using a folding camera with



Elder Berries. The illustrations to this article are by the author.

double-extension bellows. These cameras, usually made for plates, but sometimes having interchangeable roll-film holders, are not so popular in these days and may often be brought for a sum which compares very favourably with many modern cameras of far less usefulness. Apart from the extremely useful double-extension, they are equipped with a good lens and shutter; and the focusing screen, when the camera is used on a tripod, permits of very exact work to be done of a much higher standard than the usual slipshod button-pressing method.

Threshing and thatching are in full swing, while in the fields the ploughman turns in the stubble, often followed by a host of eager birds, an attractive sight. As the light is weaker avoid under exposure. It pays to purchase and study one of the many inexpensive calculators, the cost soon being repaid in saving film and gaining better pictures.



Threshing day fun.

A "Lanky Dreadnought's" Last Fling

By "Railhead"

ON Sunday, 1st July 1951, No. 50455, the last of George Hughes's fine-looking four-cylinder 4–6–0 locomotives originally designed for the Lancashire and Yorkshire Railway, and often known as "Dreadnoughts" to L. and Y. men, made a brief and last glorious return to a line which knew the engines of this class so well until some years ago. Although built after the grouping, in 1924, No. 50455, formerly L.M.S. 10455, was of essentially Lancashire and Yorkshire design. There were formerly 75 engines in the class, and they were at one time among the leading express engines of the L.M.S.

At 9.30 a.m. on that Sunday the engine drew out of Blackpool Central with an 11-coach special excursion bound for York. Impressive in B.R. lined black livery, not unlike that of the old L. and Y., No. 50455 made a brave sight, as the above photograph shows. At Manchester, Victoria Station, the platforms were crowded with people waiting for trains; but one platform was crammed with eager enthusiasts, all anxiously gazing along the line for what to them was the most important train of the day. At last it appeared, and a cheer went up; cameras clicked, and No. 50455 was recorded on ever so many rolls of film; surely only a steam locomotive could attract so much attention so late in its life!

Wondering people on other platforms and railwaymen in the vicinity gazed after the train as it drew out, with a class 5 "Stanier" 4–6–0 thrusting in the rear to help up the steep gradient through Miles Platting. Through East Lancashire we steamed, and little groups or lone enthusiasts photographed the train or waved from bridges, level crossings and lineside fields. The next stop was Rochdale, where many more people were waiting. At the troughs near Smithy Bridge the engine picked up water and on we went through the well-known Littleborough Summit Tunnel, 1 mile 1,125 yards long. The engine driver gave a long blast on the whistle as we passed through, with dense smoke swirling past in the darkness.

The photograph above by W. S. Garth shows No. 50455, the last Hughes 4-6-0, at Bolton on the run described in this article.

At Todmorden another large crowd was waiting for the train. Somehow they managed to squeeze aboard; the day was hot, which added to the discomfort, but there were few grumbles from those who had to stand in this train.

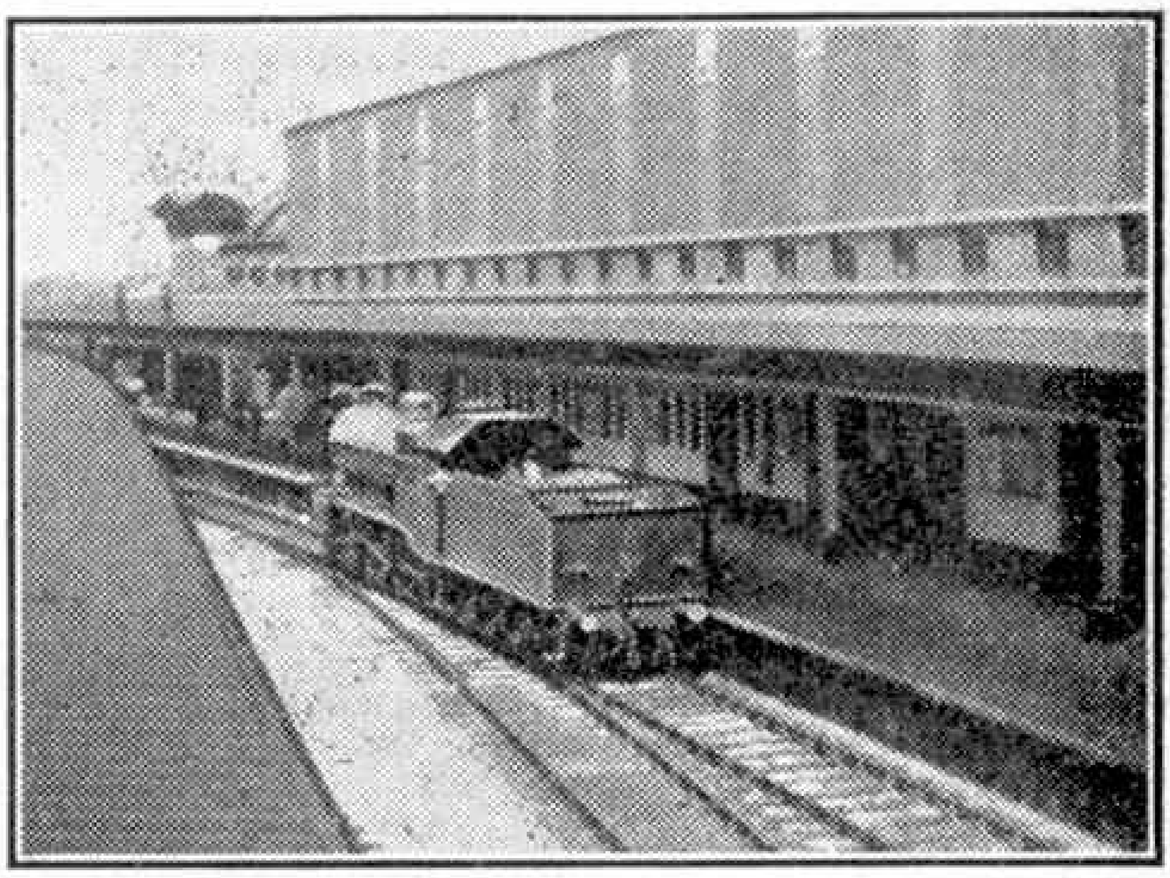
At Hall Royd Junction we drew to a halt, owing to track relaying. After a couple of minutes we backed over a crossover and then proceeded forward on the wrong line as far as Eastwood, where we rejoined the right track. At Sowerby Bridge we were brought to a dead stop, then reached Wakefield unchecked, but at Normanton a further signal check was encountered. We were well behind time now. Unfortunately, trouble was

being experienced with the lubrication, and no fast running was attempted.

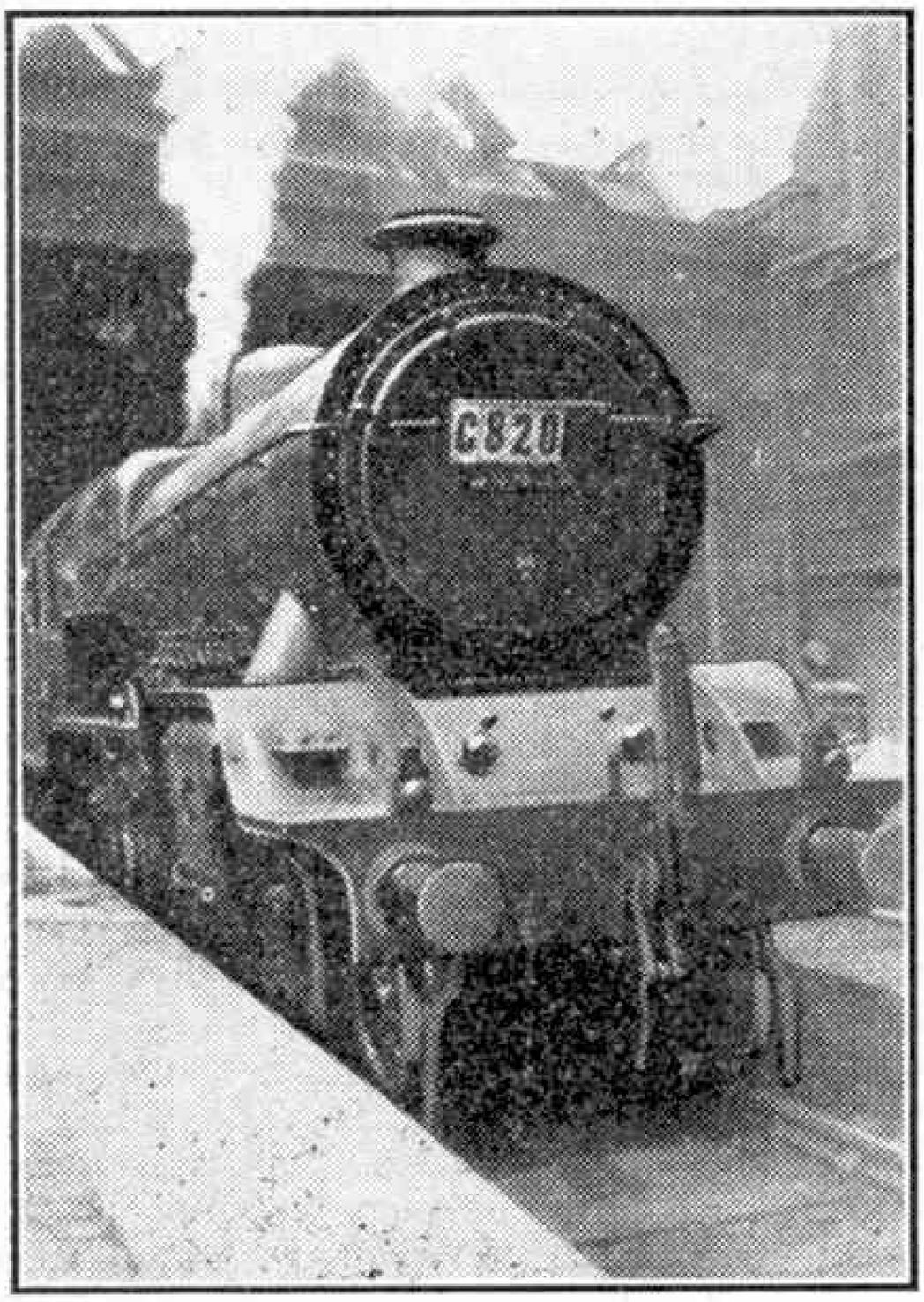
We joined the East Coast main line at Chaloners Whin Junction, and ran steadily into York, where railway fans waited to welcome the special. In a couple of moments the train was empty. A large crowd gathered round No. 50455, while many rushed over the footbridge to the opposite platform so that they could photograph the engine as she drew away from the train to the sheds. The crowds gradually dispersed and most of them spent the afternoon in the Railway Museum, that treasure house which contains such a wonderful collection of railway relics. Some settled down to a few hours' "engine spotting," while others explored the old city.

The time passed all too quickly, and an hour and a half before the train was due to depart on the return journey it was already well filled. At about 5.30 p.m. No. 50455 reappeared and backed on. From then on groups of people could be seen round about, and there was an incessant babble of conversation; young ones listened as older enthusiasts recalled the good old L. and Y. days. More photographs were taken, and many people posed by No. 50455.

At 6.18 p.m., No. 50455 drew out of York for the last time. There was little cheering now, as those who witnessed the departure knew that the scene would never again be enacted. We got away from York in good style, but the speed did not exceed more than about 54 m.p.h. between York and Manchester. Still we forged steadily onward through the brilliant evening sunshine to Normanton, where we made a halt. We stopped at Sowerby Bridge to replenish the tender tank with water, but were soon on our way again. When passing through the gloom of Littleborough Tunnel the fire-box door was opened, and a lurid glare lit up the brickwork of the roof.



No. 50455 at York. This unusual view taken from a footbridge shows the engine moving along from her train to the sheds.



An imposing front-end view of No. 50455 at Manchester Victoria.

After Rochdale we continued our homeward journey down to Manchester Victoria, where many people de-trained, and a goodly crowd gathered round the engine. Some trouble with the lubrication had been experienced during the day and the engine looked rather dishevelled now, with oil swilling about the running plates and spattered over the boiler clothing and cab windows. Not a lot was getting down where it was wanted, and the Locomotive Inspector who had ridden the engine throughout was busy with the oilcan, while the fireman was up on top of the tender getting coal forward for the next stage of the journey. Someone chalked *"So long, old pal, good show!"* on the tender. Departure time came all too soon, only a few minutes being left to those who wanted a last look at the engine. Then No. 50455 drew out of the station. People watched until the tail lamp vanished and then walked silently away.

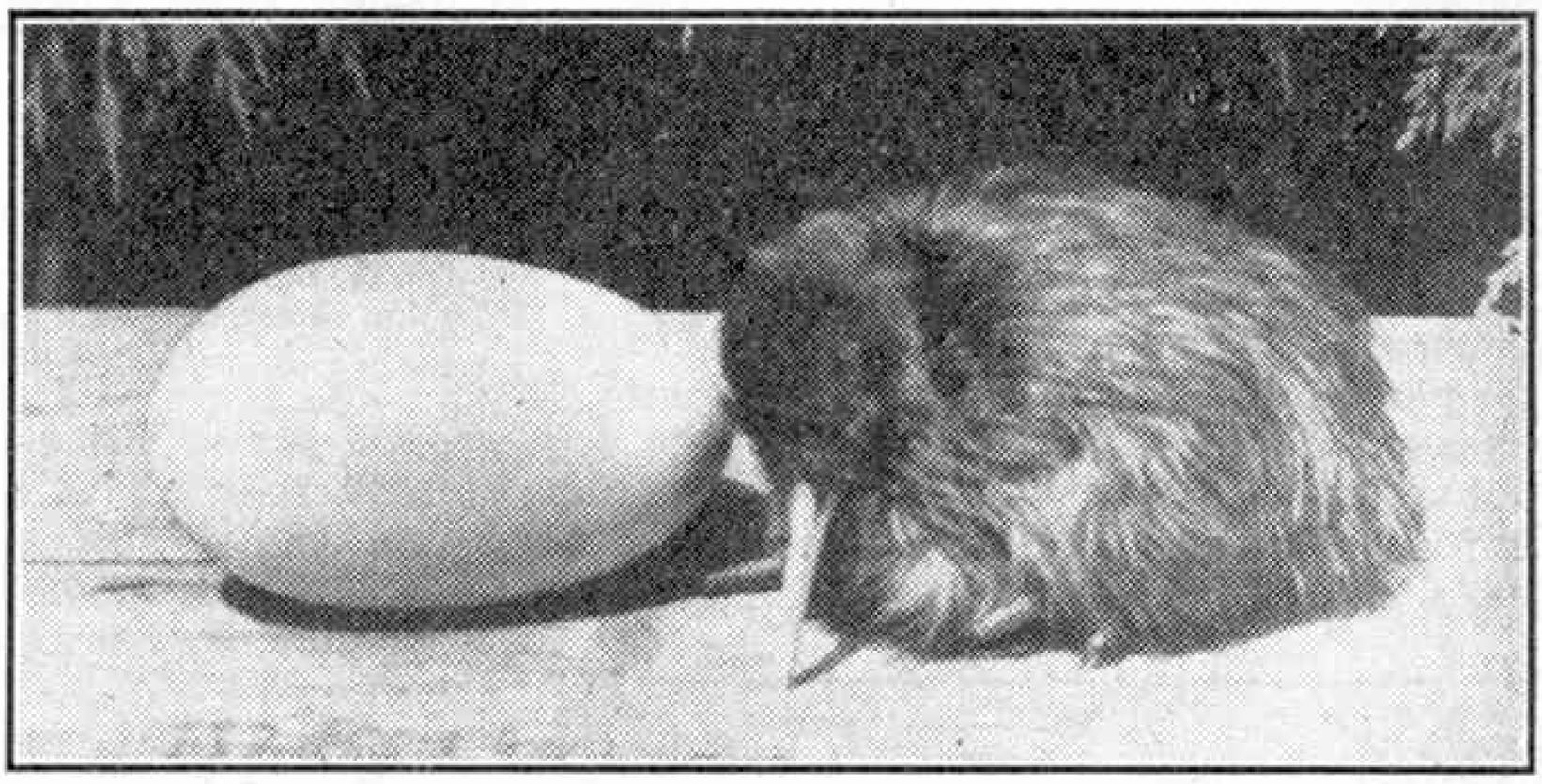
The Kiwi

New Zealand's Famous Flightless Bird

By V. May Cottrell

THE kiwi is a most remarkable bird, found only in New Zealand. It has no tail, and only tiny rudimentary wings, about an inch long, edged with pin feathers, so that it is unable to fly. But, as compensation for its flightless condition it can run very swiftly indeed on its large heavily-clawed feet. These seem quite out of proportion to its size, for the kiwi is a comparatively small bird, only about a foot high and weighing less than five pounds when fully grown. The hen birds are invariably larger than the males, and this is the only distinguishing feature as their colouring is practically identical.

The chicks have no downy stage, but are fully fledged when hatched, and their eyes are open. Their plumage is the same as that of adults, but shorter. At first it is covered with a sort of slime, but this flakes off in a few days, leaving the feathers exactly like those of its parents. Kiwi chicks are adults in miniature.



A kiwi egg, with a chick alongside. The chicks have no downy stage, but are fully fledged when hatched.

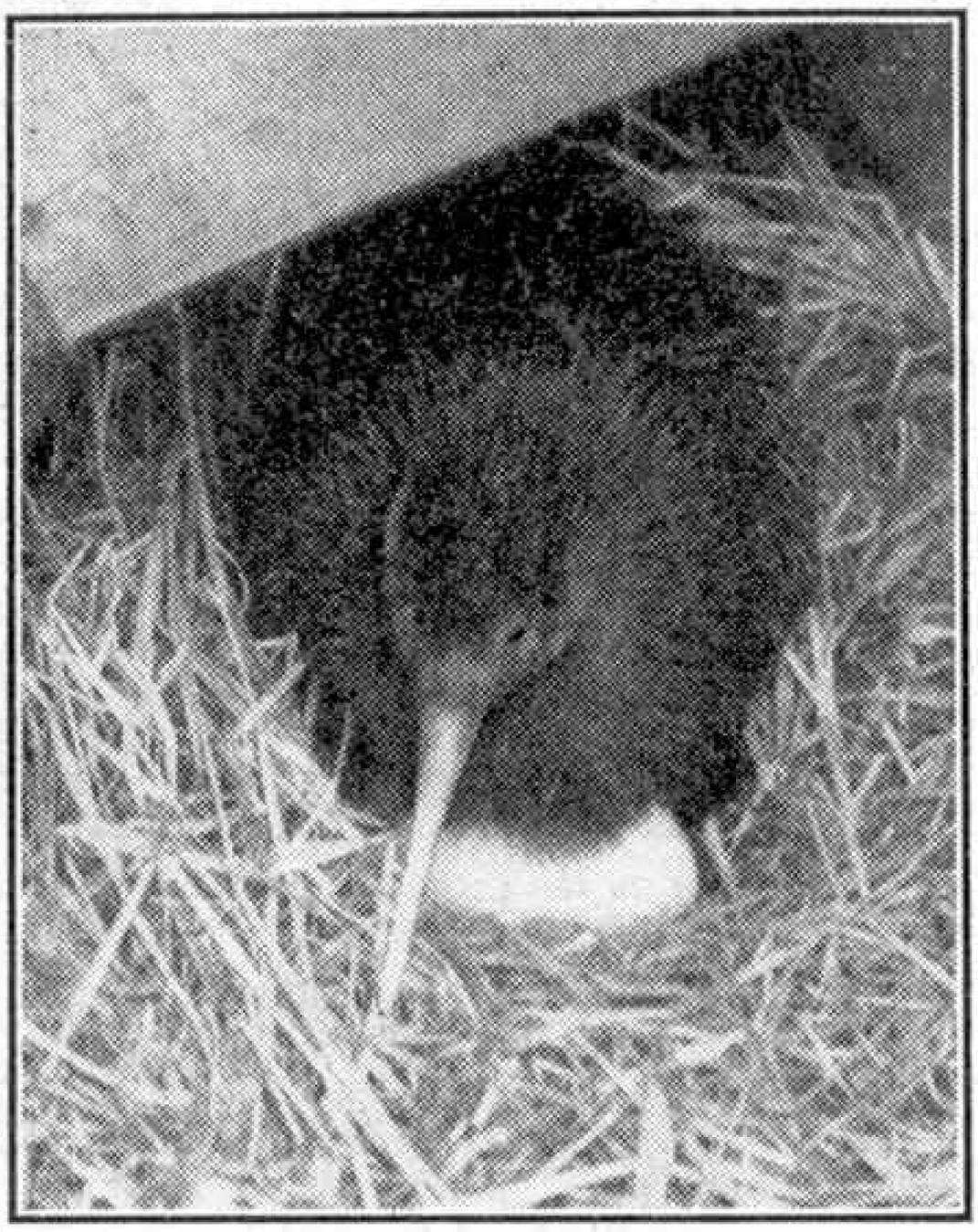
Another unusual thing about the kiwi is that it has long, stiff whiskers at the base of its beak. These probably serve a similar purpose to those of a cat, enabling the bird to judge accurately whether any particular space is wide enough to provide a passage for its body.

Like owls and bats, kiwis are nocturnal in their habits. In their native state they sleep in hollow logs, burrows and lodges during the day, emerging at night to hunt for food. They make strange, high-pitched screaming noises at night, sounding something like a long *ki* and a short *wi*, and it is from this that the birds are said to have taken their name.

The breeding burrows of the birds, which they excavate with their strong, sharp claws, are usually located among the tangled roots of forest trees, or in sandy banks. They are approached by a tunnel, from two to three feet long in some instances, and the entrance is screened whenever possible by trailing vines or underbrush. The inner chamber, in which the nest is built, is about 18 in. high, and in damp localities the sides and roof are smeared smooth as if they had been plastered. The nest itself is a somewhat elaborate structure, with a base composed of twigs and sticks and a snug lining of fern-fronds and leaves.

Until the end of October 1950 visitors to the Hawkes Bay Acclimatisation Society's game farm, near Napier, had the opportunity of studying these strange, shy birds at close quarters. It was then that one realised more clearly their many peculiarities and the outstanding characteristics that make the kiwis unique among the feathered tribe. A number were hatched in captivity, providing unfailing interest and entertainment for the large number of visitors; but unfortunately all the kiwis escaped from their pen one night and have not been recaptured or replaced.

These kiwis seemed quite tame and completely unselfconscious. The Curator, F. Donald Robson, stood them on a wide bench with boxes of sandy loam within easy reach. They delved eagerly into the deep, soft soil with their long, sensitive beaks in search of worms. These they located by means of scent and maybe



The male kiwi sits on the eggs practically throughout the 75-80 days of the hatching period, emerging only at long intervals to hunt for food.

sound as well, for the kiwi's hearing is said to be even more acute than its sense of smell. Indeed it is thought that they can actually hear the slight rustling sounds made by the movements of worms in the soil, as they have been observed in a listening attitude, like that of a thrush in search of worms, while looking for food. Their eyesight is so poor that they seem almost blind to objects a foot or so away in daylight and about 6 ft. at night.

Unlike those of other birds, the kiwi's sensitive nostrils are situated at the tip of its long, slender beak, instead of at its base. They are protected by a hard, bony overlap, which enables the bird to probe and prod about in soft ground and mossy banks to procure its food, mainly grubs, worms, the larvae of insects, and berries, with small pebbles to aid digestion, without danger of injury to its delicate nostrils.

The male bird of the mating pair at the game farm had been in captivity for 18 years and at the time of his escape was in his 23rd year, only two years short of the reputed life span of the kiwi. The female arrived at the farm some seven years later, when she was only about two months old. She was caught in a bush fire, and ran out of the burning scrub with hardly a feather left on her body, and her feet and legs badly burned. But Mr. Robson patched her up and she soon recovered.

In the wild state the hen kiwi lays only one, two or occasionally three eggs. These are about 2½ times the size of a hen's egg. When they are laid her responsibility ceases. The male bird then takes over and continues to sit on the eggs in the darkness until they are hatched, a period of from 75 to 77, or even 80 days, emerging only to hunt for food, and then at long intervals.

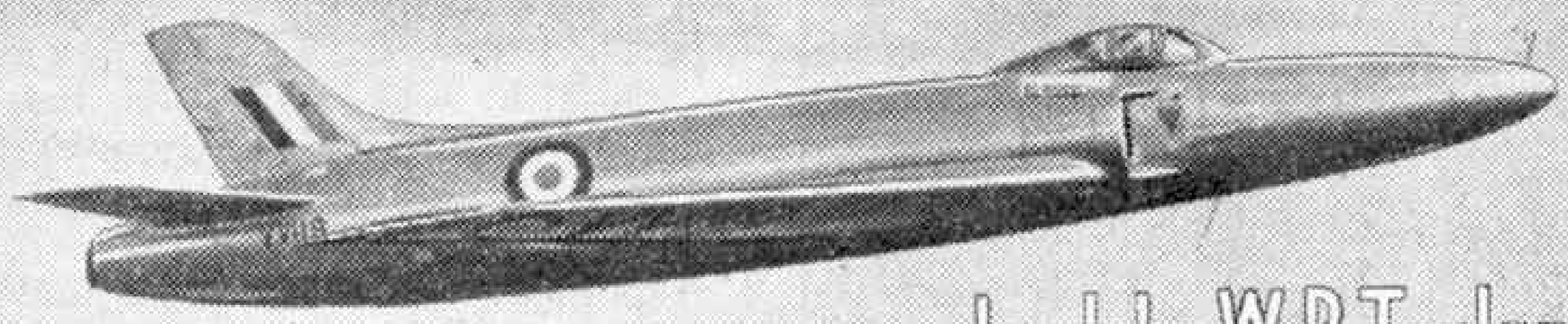
The male bird at the game farm sometimes did not leave the nest for a week at a time. When he finally emerged with the chicks he was very savage and unapproachable, because of his desire to protect the chicks from possible harm. The young birds always stay with the male, and refuse to have anything to do with their female parent. In fact those at the farm used to strike at her with their feet if she attempted to approach them. But sometimes the hen and chicks would call to each other and the Curator said that later on they all slept peaceably together.

Kiwis can inflict very nasty wounds with their strong claws. Even tame ones strike out when alarmed, but usually do not attack if spoken to before touching.

It is now illegal to kill kiwis, or to keep them in captivity without special permission, and then for study purposes only.

A male kiwi with a chick.

Air News



by John W.R. Taylor

Supermarine 535—prototype for the "Swift" jet fighter. This picture shows its new dorsal fin, and it can be seen that the guns have been removed from the wings. Photograph by courtesy of Vickers-Armstrongs Ltd.

"Swifts" for the R.A.F.

The R.A.F.'s first sweptwing jet fighter will be the Vickers-Supermarine "Swift," which is in production at the Supermarine works, side-by-side with straight-wing "Attackers" for the Royal Navy and Royal Pakistan Air Force.

Although no details of its performance or armament may yet be given, it is in general similar to the Supermarine 535, which left little doubt of its exceptional speed, manœuvrability and power at last year's S.B.A.C. Flying Display. So it is safe to assume that the Vickers-Rolls-Royce partnership which produced the "Vimy," first aircraft to cross the Atlantic non-stop, Schneider Trophy seaplanes and the immortal "Spitfire" will give Fighter Command the world-beating intercepter it needs so badly at the moment.

New Flying Boat Service

Aquila Airways are operating a new week-end flying boat service between Southampton and Jersey with 27-passenger, four-engined "Hythes," similar to those used on their popular U.K.-Madeira service. This is a particularly interesting development, as one of the world's first flying boat services was run over this route 30 years ago by the British Marine Air Navigation Company, using little six-seat "Sea Eagle" biplanes.

Oil Search from the Air

Australian Government geophysicists will soon start searching in a "Dakota" for new oil deposits, using airborne equipment that was developed in secret during the war to detect enemy U-boats. The apparatus, called a magnetometer, works on radar principles, and will enable the scientists to test rock formations hundreds of feet underground as they fly hundreds of feet up in the air. First tests will be carried out over Lake Wellington, where scientists are at present working laboriously from punts and boats.

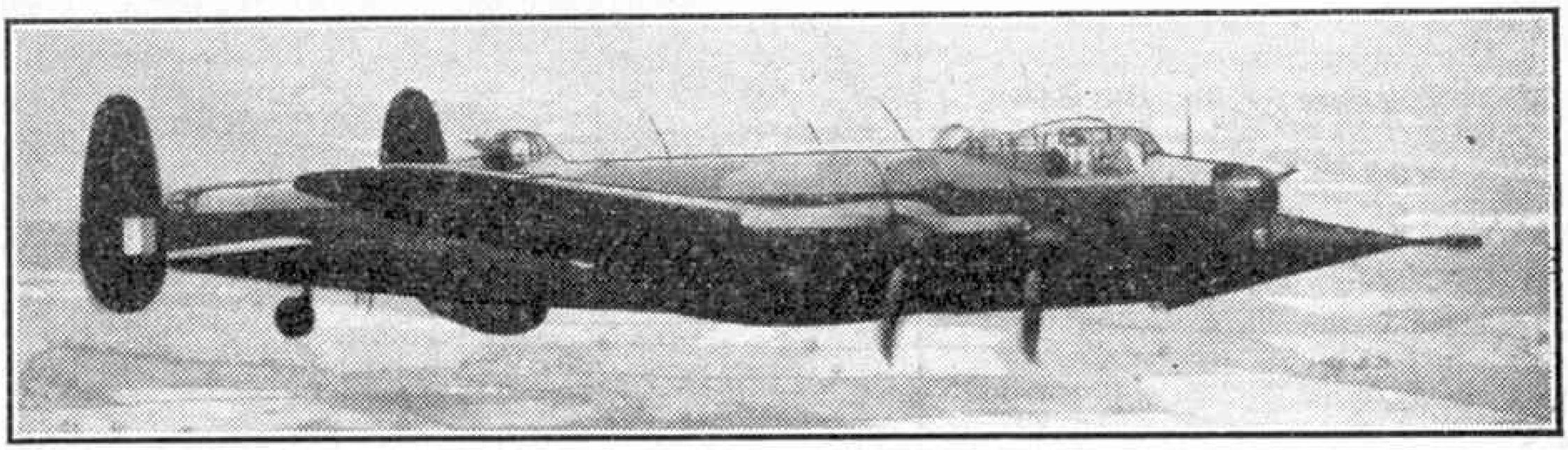
Smoothing Out the Bumps

The strange-looking contraption projecting from the nose of the "Lancaster" bomber illustrated at the foot of this page may soon ensure more comfortable journeys for airline passengers by smoothing out air gusts and bumpiness during flight, two of the chief causes of air sickness.

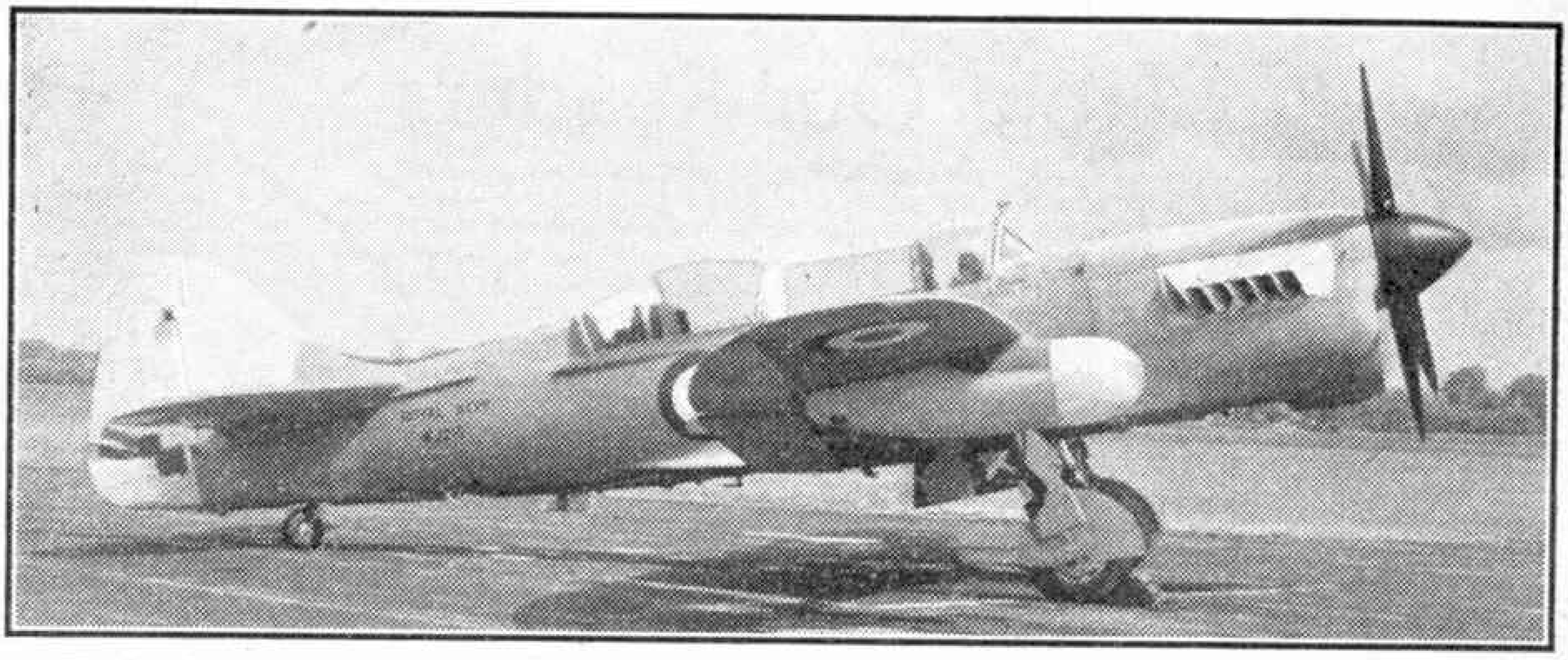
At present, pilots can reduce the effect of bumps by moving the ailerons quickly; but they have to feel the bump before they can act—and the passengers feel it too. The new device, known as the Boulton Paul Gust Alleviator, is an electronic feeler, which is far enough ahead of the aircraft to detect a bump before the 'plane itself reaches it. Although the difference is only a fraction of a second, this is enough for a signal to be transmitted automatically through the electronic mechanism, which instantly adjusts the ailerons into the best possible position to soften the oncoming bump.

Sound of Speed

Twenty or thirty seconds after watching two "Sabre" jet fighters dive at supersonic speed from 40,000 ft. to 24,000 ft., where they made a sharp pull-out, ground observers at Edwards Air Force Base, California, heard a distinct double explosion. It was, apparently, caused by underwing supersonic shock waves, which the aircraft shed at the bottom of their dive, hitting the ground.



"Lancaster" bomber with Boulton Paul Gust Alleviator projecting from the nose. Photograph by courtesy of Boulton Paul Aircraft Ltd.



The Mark 7 version of the Fairey "Firefly." Photograph by courtesy of The Fairey Aviation Co. Ltd.

A New "Firefly"

Yet another version of the highly-versatile Fairey "Firefly" has been taken off the secret list. The new Mark 7, shown above, has been designed for the important work of anti-submarine search and "strike," and differs from earlier marks in carrying a third man in its rear cockpit, to help the observer operate all the aircraft's radio and radar devices.

The "Firefly" 7 is likely to provide a few recognition problems, as it features a Mk.4 fuselage, fitted with a blister-type rear cockpit hood, long-span elliptical wings as fitted to the "Firefly" Mk.1, and a "Griffon" power plant as used on the "Barracuda" torpedo-bomber. It is, however, a completely new production type, and, together with the Hawker "Sea Hawk," de Havilland "Venom" and Westland "Wyvern," will form the backbone of the Royal Navy's offensive power for the next few years.

Arctic "Freighter"

A Bristol "Freighter" has been ferried back to Britain by a Royal Canadian Air Force crew after tests in the Arctic Circle lasting six months. It has been operating from the R.C.A.F. Winter Experimental Establishment, where several types of aircraft have been assessed recently for "over-the-Pole" operations.

The main object of the tests was to check the efficiency of the "Freighter" after standing out all night in temperatures of –50°C. to –60°C. In such conditions control cables slacken, rubber tyres freeze hard as metal, and lubricating oil freezes into solid lumps. Vapour from the pilot's breath can soon form a quarter of an inch of ice on the windscreen. Despite such rigours the "Freighter" functioned well and completed 350 hrs. flying, including an emergency trip to Corel Harbour, on the frozen shore of Hudson Bay, with a six-ton Snowblower. It was refuelled for the return trip from 45 gall. drums dragged across the snow by teams of husky dogs.

Cheaper Parachutes

A new cargo parachute made from strips of cotton muslin has been developed by the U.S. Air Research and Development Command. Officially tagged the G–13, it will replace the Air Force's old 24 ft. rayon cargo parachute, and, in clusters of three or four is expected to do the job of the 64 ft. nylon 'chute now used for heavy freight drops.

The new parachute will deliver 500 lb. of cargo from an aircraft travelling at 175 m.p.h., compared with its predecessor's 300 lb. at 150 m.p.h. The secret of its strength is that it is made up of nine strips of material separated by cotton tapes to form a 28 ft. square. Up-rushing air escapes through spaces between the strips, so cutting down opening shock and enabling a greater load to be carried.

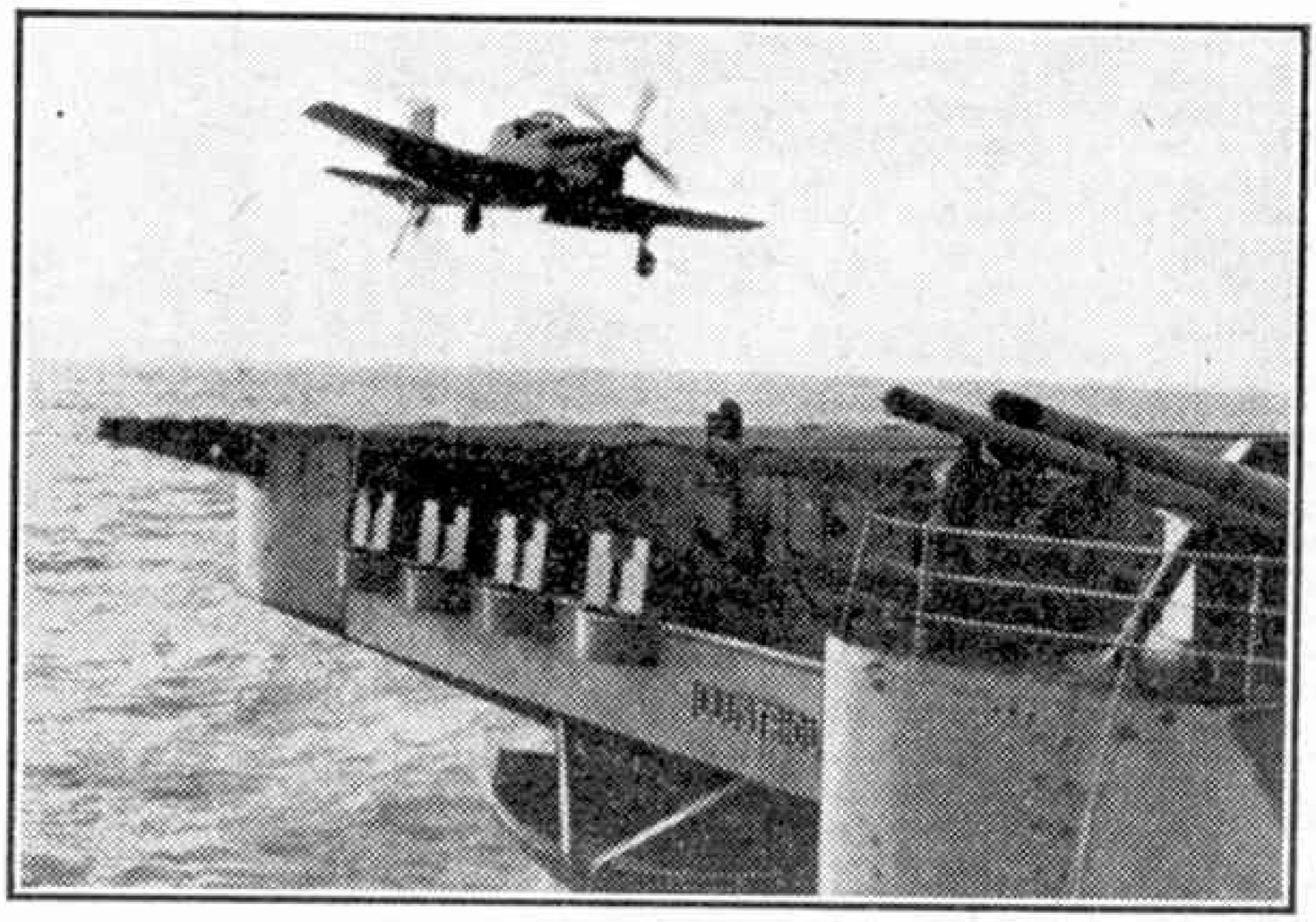
The cotton parachute is a big money saver, costing only half as much as the rayon type. In addition, it can be used direct from its cardboard packing box, instead of from the customary canvas parachute pack.

"Balliols" for the Royal Navy

Following a successful series of deck-landing trials aboard H.M.S. "*Illustrious*," the Admiralty have ordered a large number of Boulton Paul "Sea Balliol" advanced trainers for the Royal Navy. They will be basically similar to the well known "Merlin"-powered "Balliol" T.2, which is in quantity production for the Royal Air Force, but will have an arrester hook for deck-landing, a smaller propeller, new undercarriage and a few other modifications.

* * * *

The big four-jet Vickers 660 bomber, illustrated last month, has been named the "Valiant."



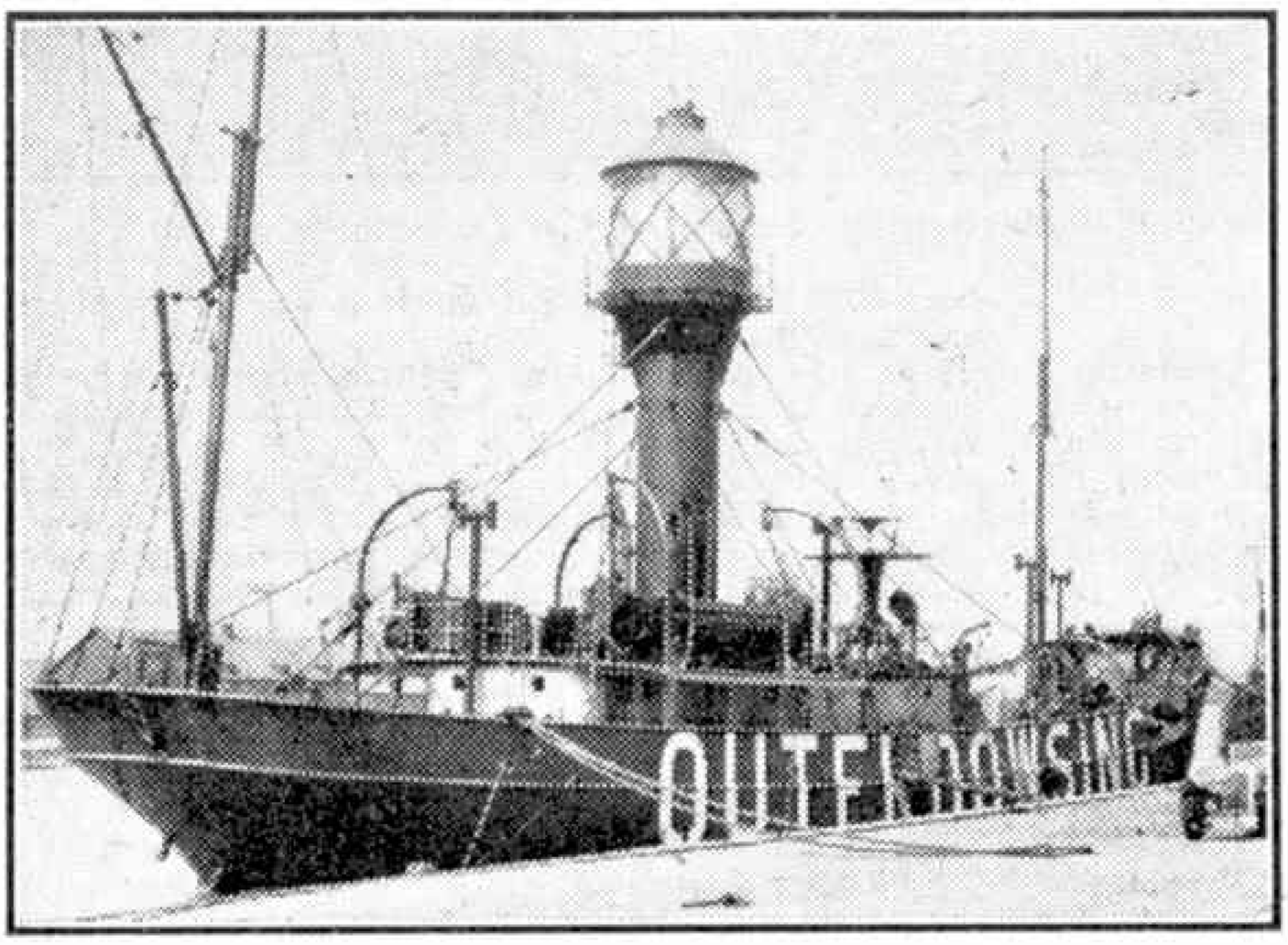
Boulton Paul "Sea Balliol" about to land on the aircraft carrier "Illustrious." Photograph by courtesy of Boulton Paul Aircraft Ltd.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A LIGHTSHIP IN DOCK

It is rare to have an opportunity to study a lightship at close quarters, so when I saw the Outerdowsing lightship in the docks at Hull I immediately took the photograph of the vessel reproduced on this page.



The Outerdowsing Lightship in Hull Docks. Photograph by L. Sansom, London.

The lightship apparently was in for one of her rare overhauls. The unusual layout of such a vessel is seen in the picture. The central light tower is braced to the decks at 10 points and the rear mast is only a few feet from the stern. The tall chimney ventilators of the crews' quarters below deck also are noteworthy.

The Outerdowsing bank is about 40 miles from the Humber, and the light from the ship stationed there can be seen for 11 miles.

L. Sansom (London).

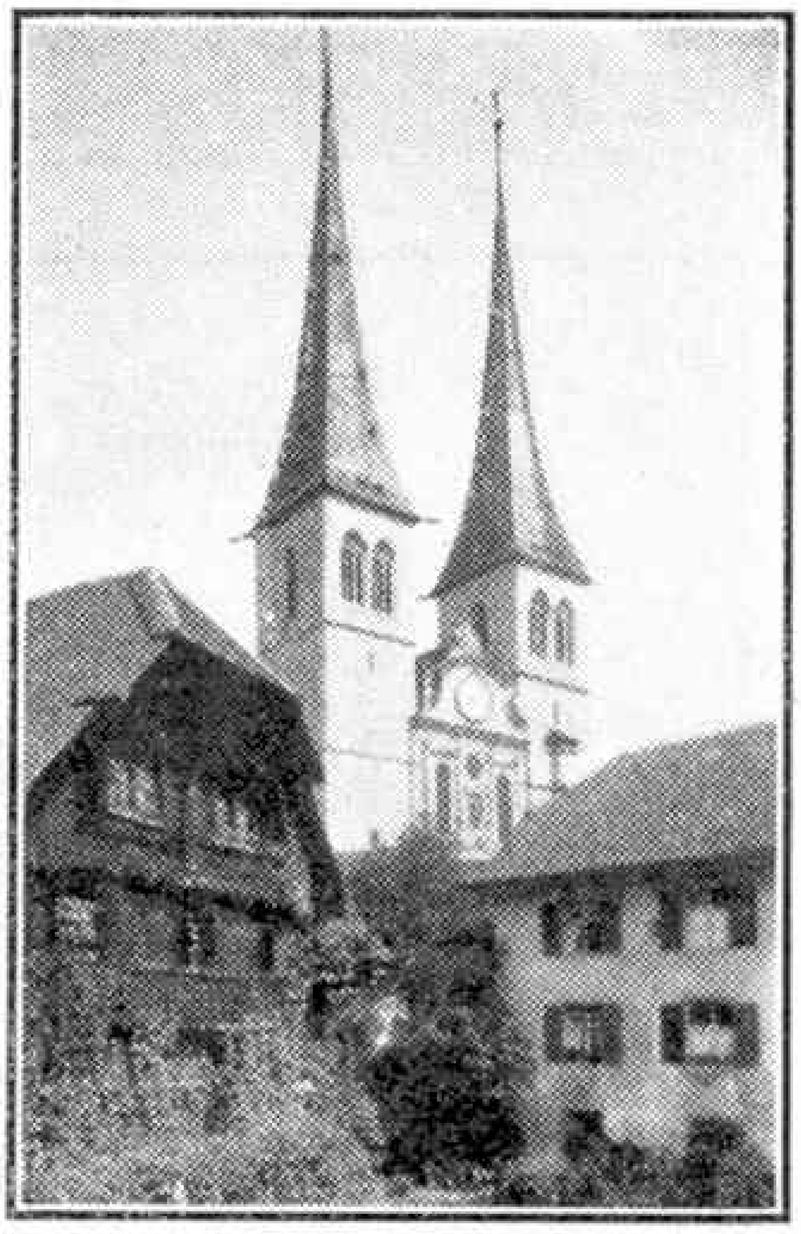
A FAMOUS SWISS CHURCH

The twin-spired Hofkirche of Lucerne always arrests the attention of new visitors to this Swiss town. Many questions are asked about it, and, queerly enough the building is often incorrectly referred to as the Cathedral. It is really a church, which has belonged since 1455 to a college of secular canons; and its correct name is the Collegiate Church of Saint Leodegar, or St. Leger.

On the façade of the building is a quaint sculpture representing the Agony in the Garden. Inside the church is the famous organ, with its 80 stops and 4,950 pipes, which can be heard by visitors on most afternoons of the week.

The 16th century twin spires of the church have an interesting history. After a large fire during Easter of 1633, most of the existing Gothic basilica was burned down, but the towers were saved. In 1506 and 1515 they were adorned with the slender spires, which make such an imposing sight from the lake.

H. North (Nottingham).



The twin spires of the Hofkirche, Lucerne. Photograph by Franz Schneider, Lucerne.

A SEA HORSE AT ST. IVES

While standing on the quay of the Cornish fishing village of St. Ives during a visit there, I noticed a fishing boat coming in. I was rather puzzled how it would bring in its catch of fish, as the harbour had been left high and dry by the retreating tide.

A small rowing boat put out to the larger vessel, which was anchored some 100 yards out. The smaller boat took off the fish in a large wicker basket and was rowed in towards the harbour. There, to my surprise, was a horse and cart which had come down to the water's edge while I had been watching the two craft. The horse, not at all shy of the sea, backed the cart into the water ready to receive the fish being brought in by the rowing boat. The basket was transferred to the cart, which was immediately trundled up through the harbour to St. Ives. The fish was then sorted. Most of it had been gutted on the boat and the remains thrown to the seagulls.

This practice reminded me of the collection of seaweed for use on the land in the Channel Islands.

M. F. Hatcher (Tiverton).

THE CHURCH OF ST. TUDNO

It is often a surprise to visitors to North Wales who ascend the great rocky headland known as the Great Orme, the highest of its kind in Great Britain, to find that tucked away on the great rock is an ancient Celtic Church. This was founded away back in the 6th century by St. Tudno, but portions were not built until the 11th century and the church was extended about 400 years later. It was restored last century.

There are beautiful stained glass windows in the church, and its interior is examined with great interest by many of those who go to its services. On fine Sundays in summer these are held in the open. Cushions are placed on stones that provide seats for those who require them, and a harmonium takes over the duties of the organ.

Gloria Florance (Solihull).

An Invitation To All Meccano Model-Builders

By "Spanner"

Do Not Miss This Chance!

ONE of the surest ways to get the utmost interest and pleasure from the Meccano hobby is by taking part in the model-building and other types of Meccano Competitions arranged each month in the "*M.M.*" In preparing an entry for these Contests you are given an incentive to produce your best workmanship, and even if you fail to win a prize at your first attempt you will have the knowledge that your work has competed against that of your fellows, and no doubt your lack of success will spur you on to further and greater efforts. On the other hand you may find yourself among the prize-winners, and in this case the acquisition of a useful Cheque will be added to the very real benefits of fun and pleasure you will have had in building and preparing your entry.

I have always urged all Meccano enthusiasts to take part in these monthly Contests, and a great many of those who have followed my advice have written from time to time telling me of the keen anticipation with which they have waited for the results, and of the great thrill they experienced when one morning the postman delivered a letter from Meccano Ltd., bearing the glad news of success!

I do hope therefore that if you have a Meccano Outfit, no matter how small, you will decide to send in an entry for the new September General Model-Building Contest that is announced this month. This Contest has been specially organised for the purpose of encouraging boys and girls of all ages living in Great Britain or Overseas, and no matter what your age is you stand an equal chance of success. All you have to do is to think of a new model of any kind—no matter how simple—and then construct it as neatly as possible. There are no troublesome entry forms to fill in and no fees to be paid.

You may use any number of Meccano parts you like in building your model, but do not make the mistake of thinking that the bigger and more complicated you make it the better will be your chance of winning a prize. Very often indeed the reverse is the case, and a simple and strongly built model of an original kind gets a prize in preference to a much larger model that has been constructed without any regard either to correct principles or to neatness and good proportions. Always remember, the chief points the judges will look for are originality, strong construction, good proportions and realism.

Entries will be divided into two Sections; A, for readers of all ages living in the British Isles: B, for readers of all ages living Overseas. In each Section a separate and complete set of prizes will be awarded, and full details of these are given in the panel on this page. *The age of each competitor will be taken into consideration in assessing the merits of his work.*

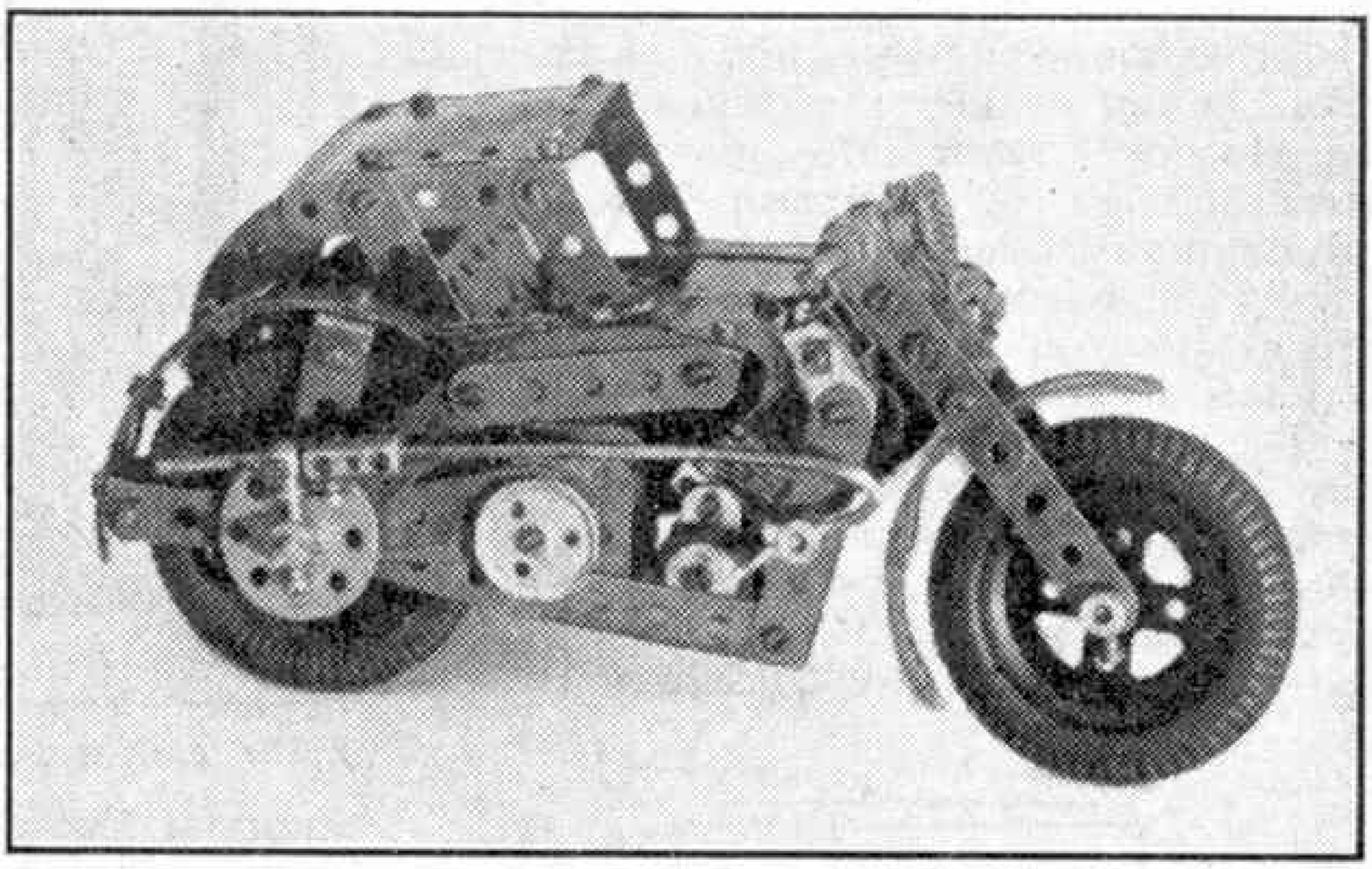
When the model is built it is only necessary to obtain a photograph or make a neat sketch showing its main features. The photograph or sketch should then be enclosed together with a few brief details of the model, in an envelope addressed "*September General Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13.*" The actual model must not be sent.

It is important to note that your age, name and address must be written on the back of each photograph or drawing submitted. Photographs of drawings need not be your own work, but the model must be the result of your own unaided efforts.

If you live in Great Britain you must forward your entry not later than 31st October 1951. This allows you two months in which to build your model and prepare photographs or sketches, etc. If you live Overseas, however, you will require a longer period, and in this case the closing date is 31st December 1951.

Unsuccessful entries will be returned providing a stamped addressed envelope of the requisite size is enclosed, but successful entries become the property of Meccano Ltd.

The full lists of prize-winners will be published in the "*M.M.*" as soon after the closing date as possible, and prize-winners will be notified by letter.



A typical example of a simple model that won a prize in a recent "M.M." Competition. The motorcycle combination shown here was built by Eric Howell, Dronfield, Nr. Sheffield.

September Model-Building Competition

THE PRIZES

A separate and complete set of prizes as follows will be awarded in each Section (Home and Overseas) of the Competition.

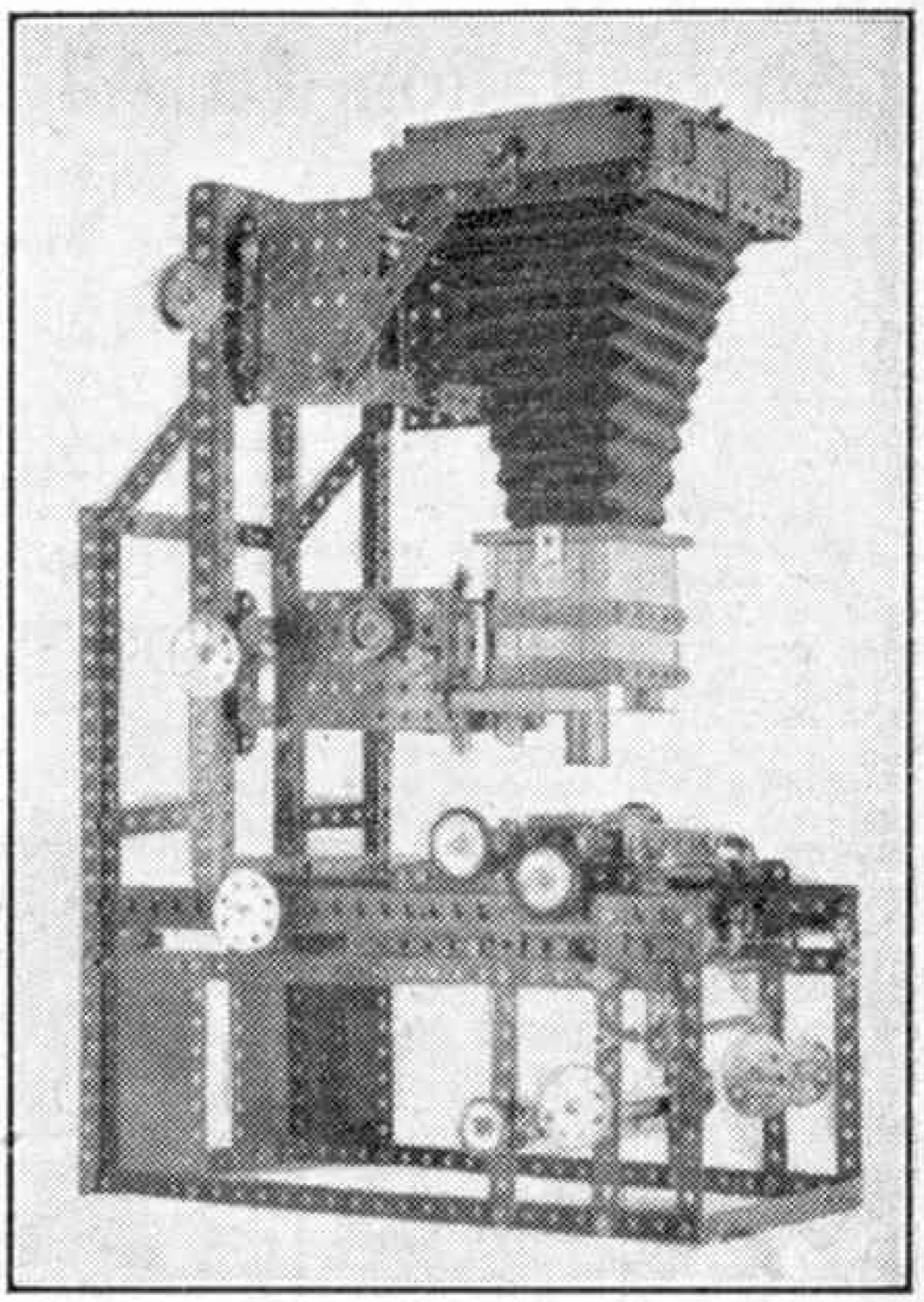
First Cheque for £3/3/-.
Second Cheque for £2/2/-.
Third Cheque for £1/1/-.
Ten Prizes each consisting of a Postal Order for 10/6.
Ten Prizes each consisting of a Postal Order for 5/-.
Certificates of Merit also will be awarded.

A Meccano Projection Microscope

By "Spanner"

EXAMPLES of Meccano used in connection with other hobbies have been mentioned in the "*M.M.*" from time to time and this month I am able to describe one of the ways in which Meccano can be of value in connection with microscopy. Many Meccano enthusiasts also indulge in microscope work and photography, and therefore the fine projection microscope shown in the upper illustration on this page should be of interest to them.

The apparatus illustrated provides quite an efficient method for obtaining very interesting photomicrographs, and was designed and built by Mr. B. Minister, St. Leonards-on-Sea. The apparatus is no more difficult to construct than a normal Meccano model, but care must be taken to ensure that all the parts are trued up as construction proceeds. Readers will appreciate that when an object is enlarged to a considerable extent, the slightest of movements unnoticed by the unaided eye are themselves magnified and become fast sweeping movements in the field of magnified vision.



The projection microscope described on this page.

Fig.1

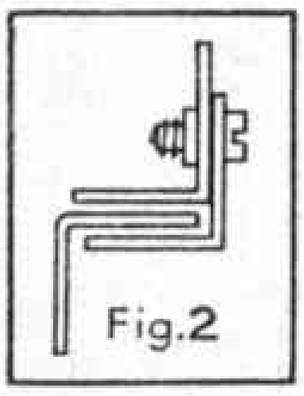
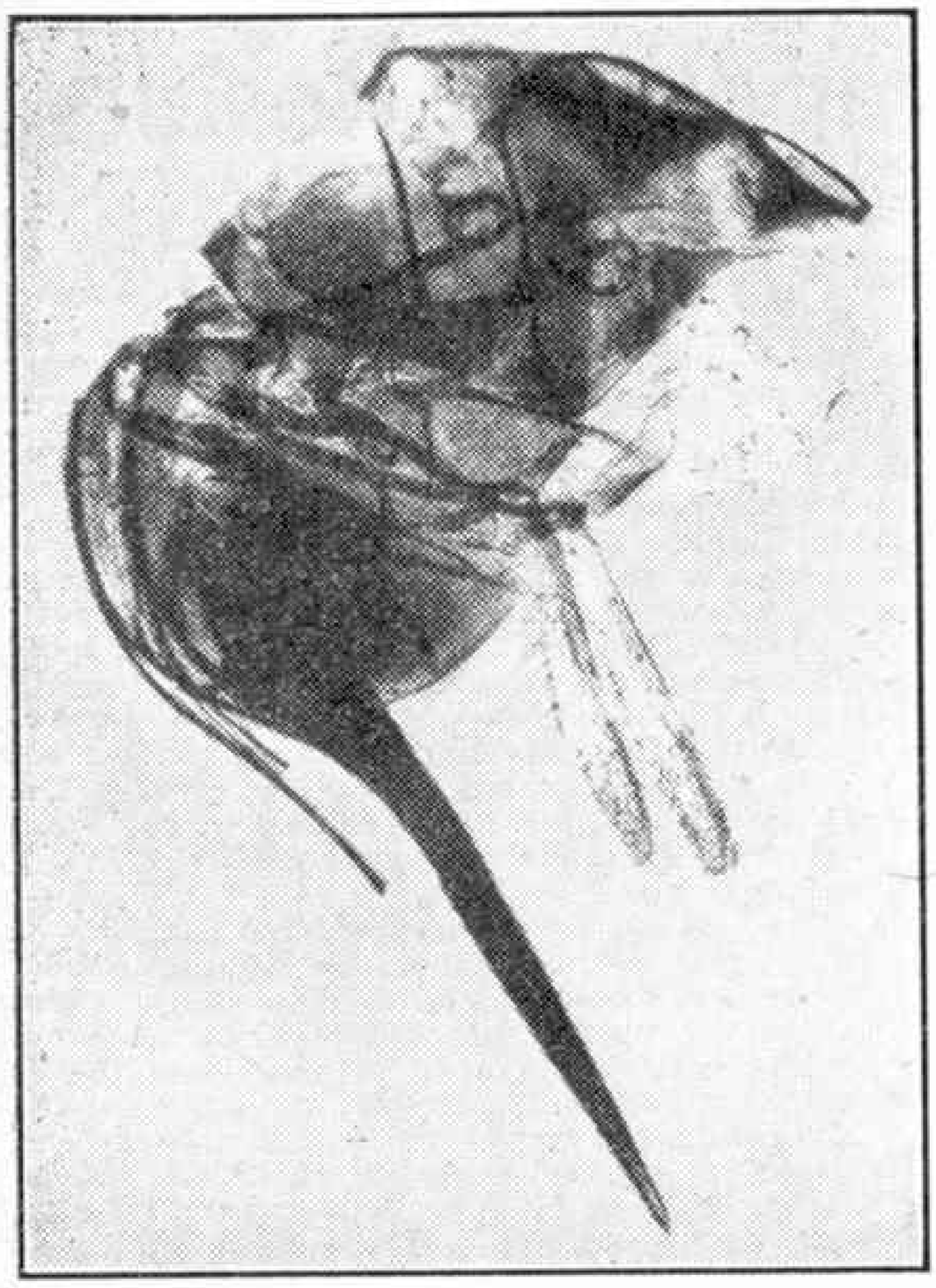


Fig.2

Diagrams showing the layout of the apparatus and the various controls.

The actual design of the instrument may of course be varied considerably, according to the Meccano parts available. Whatever the details of the design, however, the principle will be the same. The essential requirements, in addition to Meccano parts, are a low power microscope object lens; a bellows camera with a ground glass focusing screen; and an electric lamp, the light rays of which are concentrated by means of a lens or condenser on to the object to be viewed, which is placed on a mechanical stage built from Meccano. This light source may be reflected by a mirror, or mounted directly underneath the mechanical stage according to the type of lamp used. The latter method was used in the instrument illustrated, but to avoid confusion the apparatus has been stripped down to its essentials and the lamphouse removed. The microscope lens is placed between the object and the ground glass focusing



Reproduction of a photograph of the sting of a bee taken with the projection microscope.

screen of the camera. The lens may be a 1″, 1½″ or 3″ objective, according to the degree of magnification required. This lens replaces the camera lens and collects the rays of light from the illuminated object, enlarges, and projects it on to the screen.

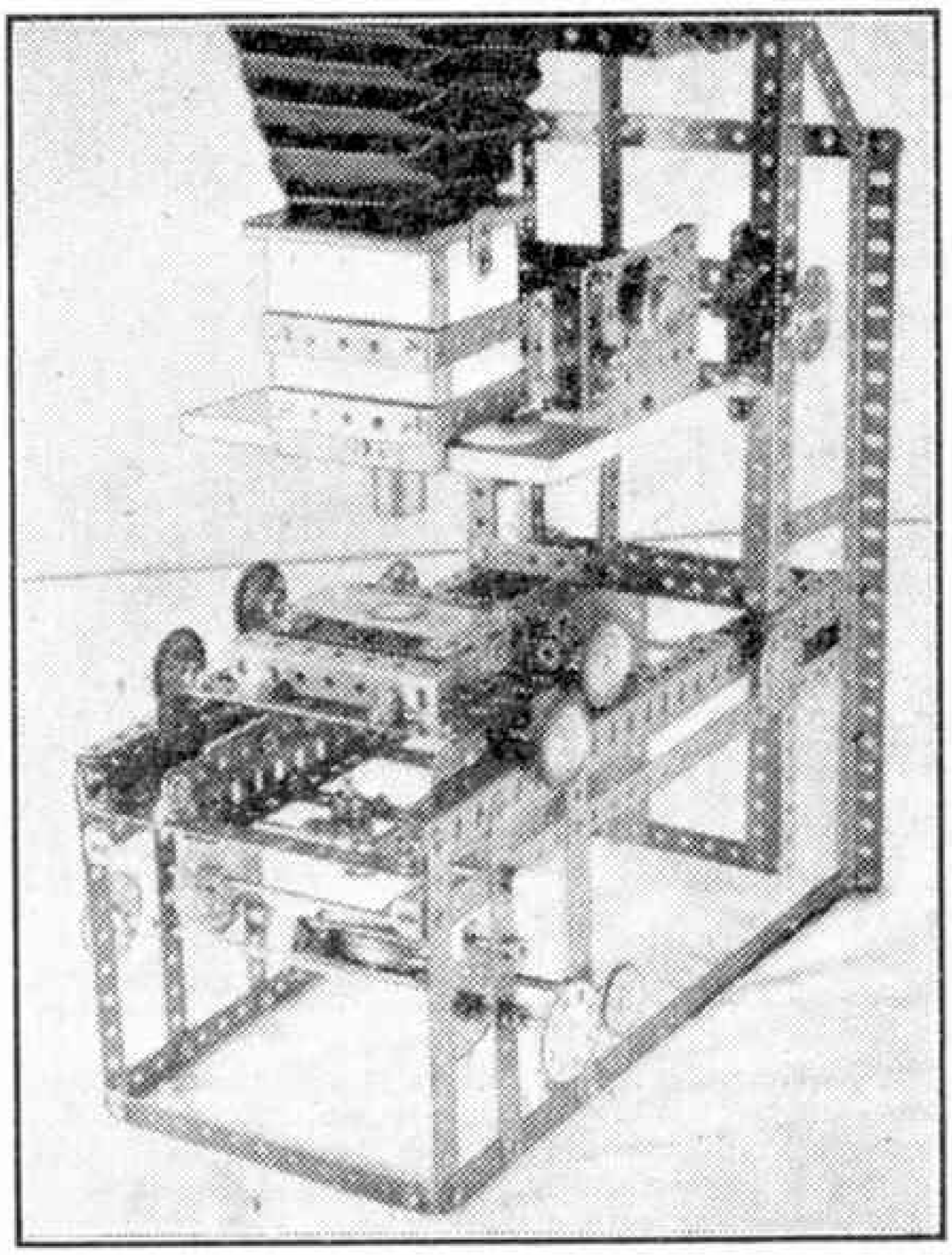
In the apparatus illustrated, provision was made for a micro-polariscope prism to be mounted under the stage, in such a way that it could be disengaged with the aid of rack and pinion mechanism by turning a suitable handwheel shown at D in Fig. 1. This, however, is a refinement that can be eliminated if desired.

For convenience the actual Meccano construction is made in two separate units—1, the base with its mechanical stage, and either a tilting mirror or lamphouse underneath, and 2, the upright back or column on which slides the lens focusing mechanism and the camera holder. The two units are bolted together on completion. All the sliding parts are arranged by means of one Angle Girder sliding between two others as shown in the small sketch (Fig. 2) and this method is quite sturdy and accurate when the Girders are slightly lubricated.

The mechanical stage slides backward and forward by turning the control F, the Rod of which carries a ½″ Pinion that works against a Rack Strip fixed underneath. The side to side movement of the stage is obtained by a Screwed Rod working through two screw holes in Couplings suitably mounted one at each side of the movable part of the stage. Thus when the Rod is turned it pushes this part of the stage along, the direction of movement depending upon the way the handwheel E is turned.

Coarse focusing of the lens is achieved by turning the control C, the Rod of which carries a ½″ Pinion engaging a Rack Strip fixed to the back. This provides vertical movement to the lens holder. For fine focusing adjustment, which is necessary when using a high power lens, a control B is included. The handwheel A simply extends the camera bellows by means of a rack and pinion, and brings the picture thrown on the ground glass screen J to the size required. The greater the length of bellows extension the greater the degree of enlargement.

If the constructor cannot obtain a proper projection lamp, a 6v.–24w. or 12v.–36w. car headlamp bulb worked from a transformer will give excellent results, provided that a condenser lens is arranged between it and the object slide. Alternatively a photoflood lamp may be used in a lamphouse, (*Continued on page 430*)



A close up view of the object stage and the focusing controls.

Model-Building Competition Results

By "Spanner"

"Winter" General Contest (Overseas Section)

FOR the third consecutive year 11 year old Peter Haley, Montreal, has won the prize for the best exhibit in the Annual "Hobbies" Show organised by the Y.M.C.A., Westmount, Montreal. His entry each year consisted of Meccano models, including a splendid cargo liner, a transporter bridge and a neat model of the Eiffel Tower. He decided therefore to submit these models for the "Winter" Contest announced in the February and March 1951 issues of the "*M.M.*," and I am pleased to have this opportunity of congratulating him on the fact that he was successful in carrying off the First Prize. Peter and his model liner are shown in one of the accompanying illustrations, together with two of his prize Cups, and I am sure readers will agree that his work fully deserves the success it has achieved. I liked particularly the details of the deck fittings, in the majority of which quite reasonable proportions are obtained.

Second Prize in the Winter Competition went to G. E. Vale, Grafton, N.S.W., Australia, for a small

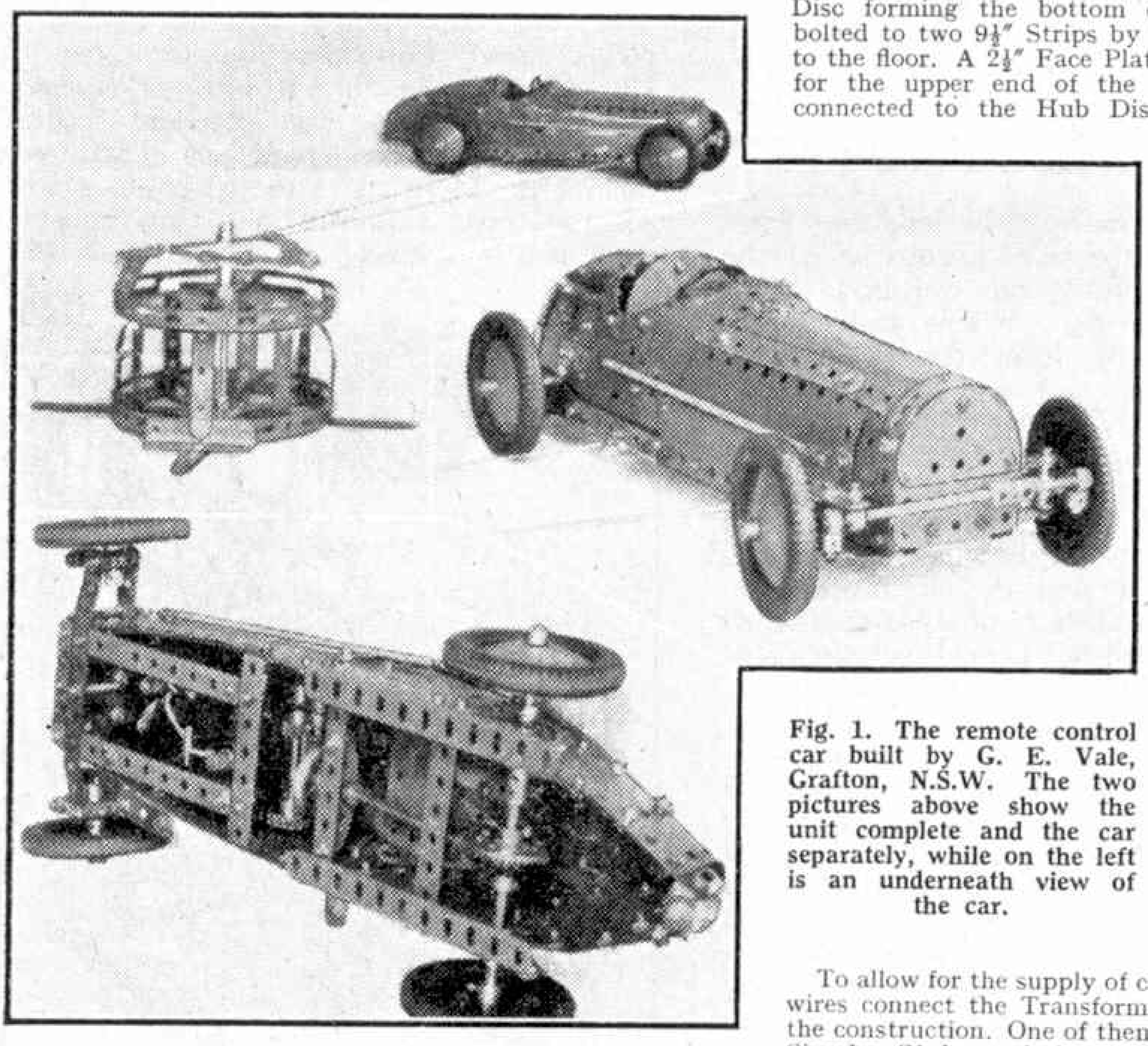


Fig. 1. The remote control car built by G. E. Vale, Grafton, N.S.W. The two pictures above show the unit complete and the car separately, while on the left is an underneath view of the car.

remote-control racing car. It is electrically powered and travels in a circle. I am giving the main constructional details of the control and current supply feed as fully as possible, as I feel that this is a model that other readers may wish to assemble for themselves.

The model consists of two separate constructions, the car itself and a central assembly from which the car operates. The power unit is an E20R Electric Motor. A 1" Sprocket on the armature shaft transmits the drive to a ¾" Sprocket mounted on a 2½" Rod journalled in the Motor side-plates. The drive is transferred from there to the back axle.

Two Angle Brackets forming the electrical connections to the car are bolted to the right-hand side of the body. The forward one is clamped between and insulated from two 1½" Strips. A short length of copper wire turned around the shank of the forward clamping bolt connects the 1½" Strips to one terminal of the Motor. This wire does not make contact with any part of the car except the Motor terminal and the 1½" Strips. The second terminal of the Motor is connected by another length of wire direct to the chassis.

The front wheels are set to the desired angle and the steering is not operated from the steering wheel.

The central assembly forms the pivot around which the car travels and also provides the means to feed a continuous supply of current to the car while moving and to keep it on course. A Hub Disc forming the bottom of the assembly is bolted to two 9½" Strips by which it is fastened to the floor. A 2½" Face Plate forming a support for the upper end of the central 5" Rod, is connected to the Hub Disc by four built-up strips, each consisting of a Formed Slotted Strip and a 1½" Strip. The lower end of the 5" Rod is held in the boss of a 1½" Pulley. A ¾" Flanged Wheel is also locked to the 5" Rod immediately above the Face Plate. A 5½" Circular Girder seen at the top is completely insulated from the rest of the assembly. It is supported on the ends of four 2½" × ½" Double Angle Strips bolted to the Hub Disc. The Circular Girder is clamped to the top of the Double Angle Strips by Fishplates, with insulating paper between.

To allow for the supply of current two insulated wires connect the Transformer with the base of the construction. One of them is connected to the Circular Girder and the other to the Hub Disc. They are laid flat on the floor to allow the car to pass over them easily, and are connected to the Transformer, which is placed at some convenient point outside the area traversed by the car.

A 4½" Strip is bolted to a Bush Wheel free to revolve on the upper end of the 5" Rod. Also bolted to this Strip are two 4" Curved Strips, which are fastened together at their outer ends. One end of

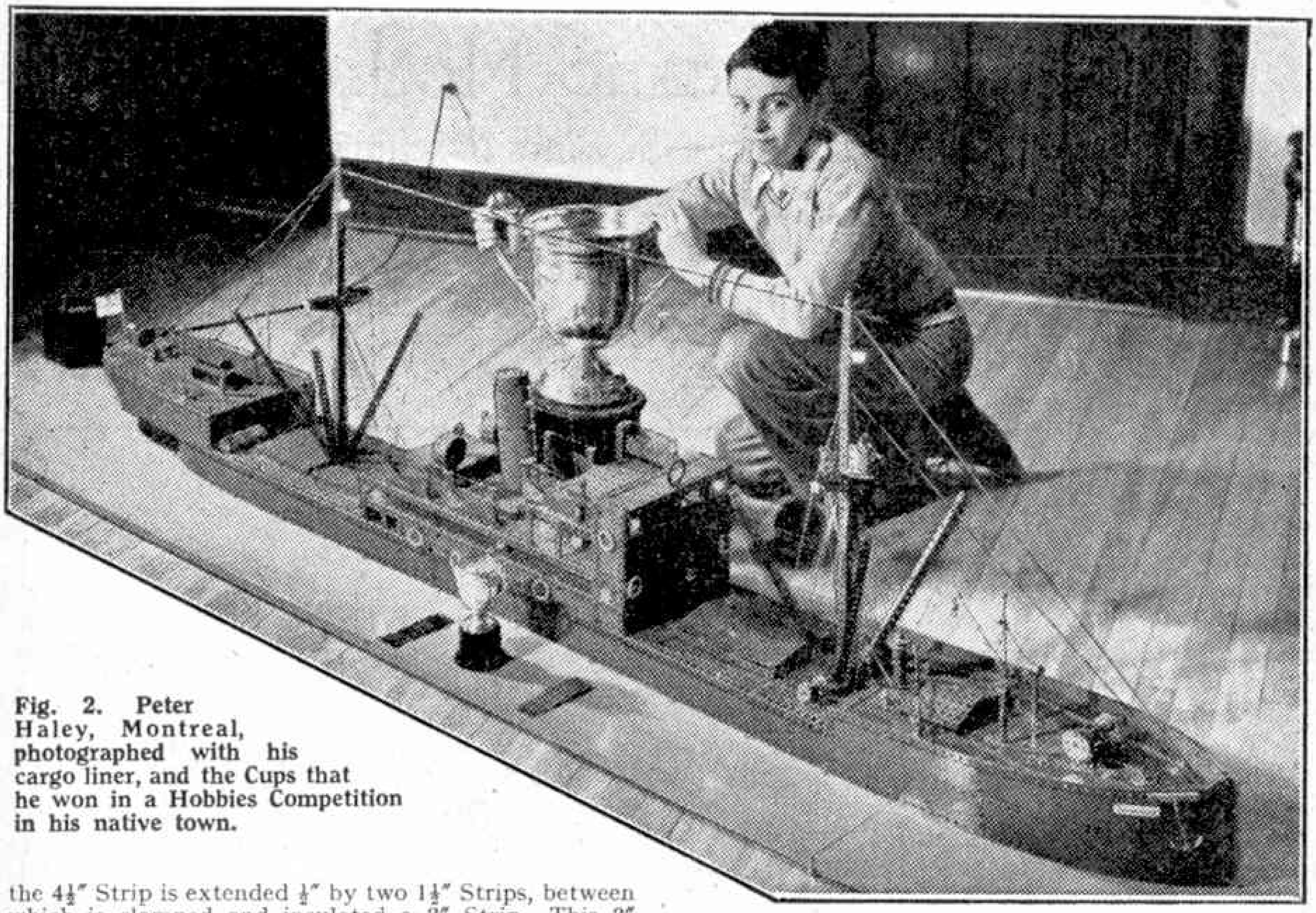


Fig. 2. Peter Haley, Montreal, photographed with his cargo liner, and the Cups that he won in a Hobbies Competition in his native town.

the 4½" Strip is extended ½" by two 1½" Strips, between which is clamped and insulated a 3" Strip. This 3" Strip is bent so that it contacts the edge of the 5½" Circular Girder and so picks up the current as it revolves. A Compression Spring and a ½" Pulley locked on the 5" Rod above the Bush Wheel exerts sufficient pressure on the 3" Strip to make good contact with the Circular Girder.

Two insulated wires, one of which is connected to the 3" Strip and the other to the end of the 4½" Strip, are led under a ¾" Washer at the junction of the two 4" Curved Strips and fastened to the connections of the car mentioned previously.

To operate the model the wires are adjusted to their correct relative lengths, the track cleared and the Motor switch put in the right position. The current is then switched on and the car is started, stopped and regulated as desired by means of the Transformer speed controller.

Land cranes are always well in evidence in Meccano Competitions, but it is only rarely that one sees a really good model of the pontoon or floating type of crane. However, a really interesting crane of this kind formed the subject of the model sent by Kenneth Jones, Berala, N.S.W., Australia, and was placed Third in the Prize list. Unfortunately the photographs submitted of this model are not suitable for reproduction.

The list of minor awards in the Contest and the names and addresses of recipients are as follows:

Prizes of 10/6: M. Taft, Ontario, Canada; M. Smith, Stellenbosch, South Africa; F. J. Kayser, Bulawayo, S. Rhodesia; S. J. Reid, Quebec, Canada; R. Reinquin, Brussels, Belgium.

Prizes of 5/–: R. Corp, Peterborough, Canada; R. Williamson, Wellington, New Zealand; M. E. Zogheb, Cairo, Egypt; M. Johnston, Richmond Hill, Canada; J. E. Kruizinga, Haren, Gron, Netherlands.

Certificates of Merit: R. Kamar, New Delhi, India; D. Brillinger, Toronto, Ontario, Canada; M. Wilkins, Montevideo, Uruguay.

I would like to congratulate all these lucky competitors and I do hope that the many humdreds of other less fortunate competitors will not allow their failure on this occasion to discourage further efforts in future contests. Some of the entries that failed to win a prize did so not so much because they were poor models but because of the very high standard reached by so many of the competitors. This was a remarkable feature of the entries and I look forward with keen interest to seeing further examples of the skill of our Overseas enthusiasts.

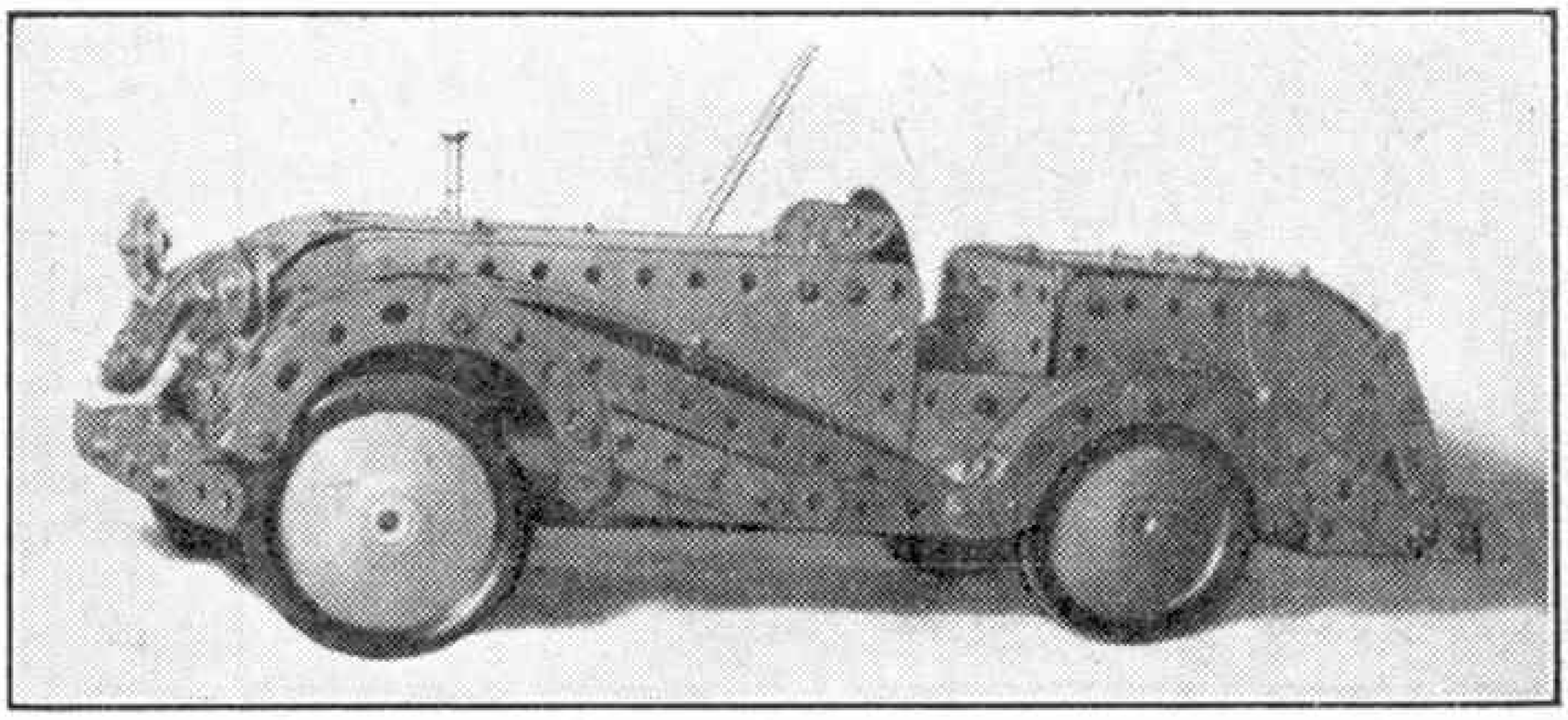


Fig. 3. A simple and neatly constructed sports car built by Malvern van Wyk Smith, Stellenbosch, South Africa.

New Meccano Models

Steam Wagon—Sewing Machine

THE simple steam wagon shown in Figs. 1 and 2 is built from the parts in Meccano Outfit No. 3, and is driven by a *Magic* Clockwork Motor placed underneath the chassis. The model is a good example of the realistic effect that can be obtained by the careful use of a few simple parts.

The chassis consists of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate extended by $5\frac{1}{2}''$ Strips 1. These Strips overlap the Plate by six holes, and another $5\frac{1}{2}''$ Strip 2 on each side is also bolted to the flange of the Plate.

The curved front of the model is formed by a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate bolted to the Flanged Plate as shown. To the lower edge of the Flexible Plate is bolted a Formed Slotted Strip, and a similar part is attached to the upper edge by a Fishplate. The bolt holding the Fishplate fixes also an Angle Bracket, and a Bush Wheel representing the top of the boiler is bolted to the Bracket. A $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate is curved to the same diameter as the Bush Wheel, and is attached to it by an Angle Bracket. The lower edge of the Plate is fixed to the leading flange of the Flanged Plate by a bolt 3, which holds also an Angle Bracket. A Double Bracket 4 is bolted tightly to the Angle Bracket.

The back of the cab is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate fixed to Angle Brackets attached to the Flanged Plate. The roof is formed by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate and a Semi-Circular Plate, and is fixed to Angle Brackets bolted to the rear of the cab. The side supports 5 are $2\frac{1}{2}''$ Strips, and the chimney is a 2" Rod fixed in the Bush Wheel and made to look stouter by the use of Spring Clips. A Trunnion 6 is attached at each side of the cab.

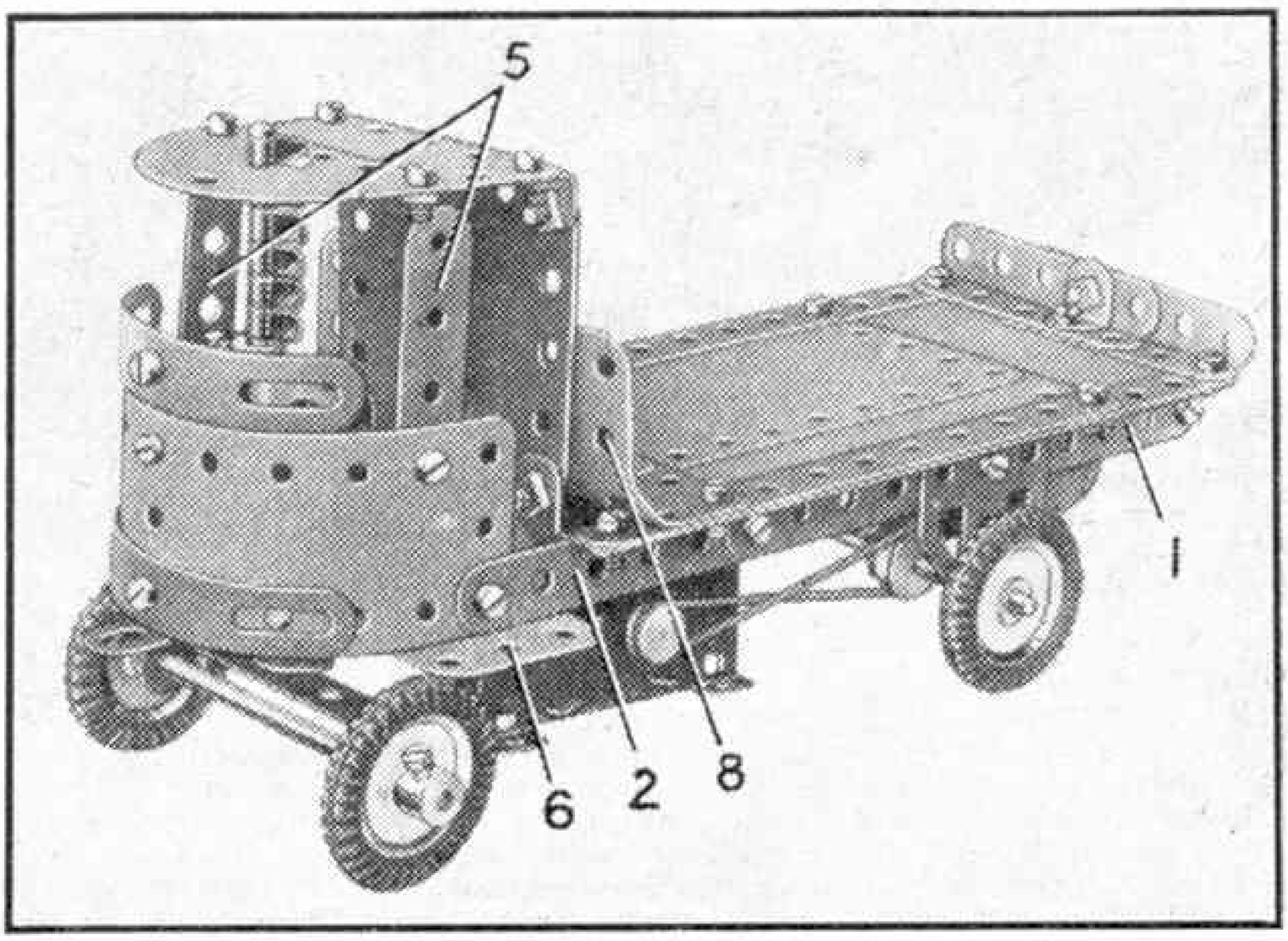


Fig. 1. A steam lorry built from the parts in a Meccano Outfit No. 3.

The front wheels are held on a $3\frac{1}{2}''$ Rod revolving in the ends of a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip, which pivots on a Bolt passed through its centre hole and lock-nutted to the Double Bracket 4. The rear wheels are fixed on a $3\frac{1}{2}''$ Rod revolving in Flat Trunnions, and the Rod carries also the $\frac{1}{2}''$ Pulley supplied with the *Magic* Motor. The Motor is bolted to the

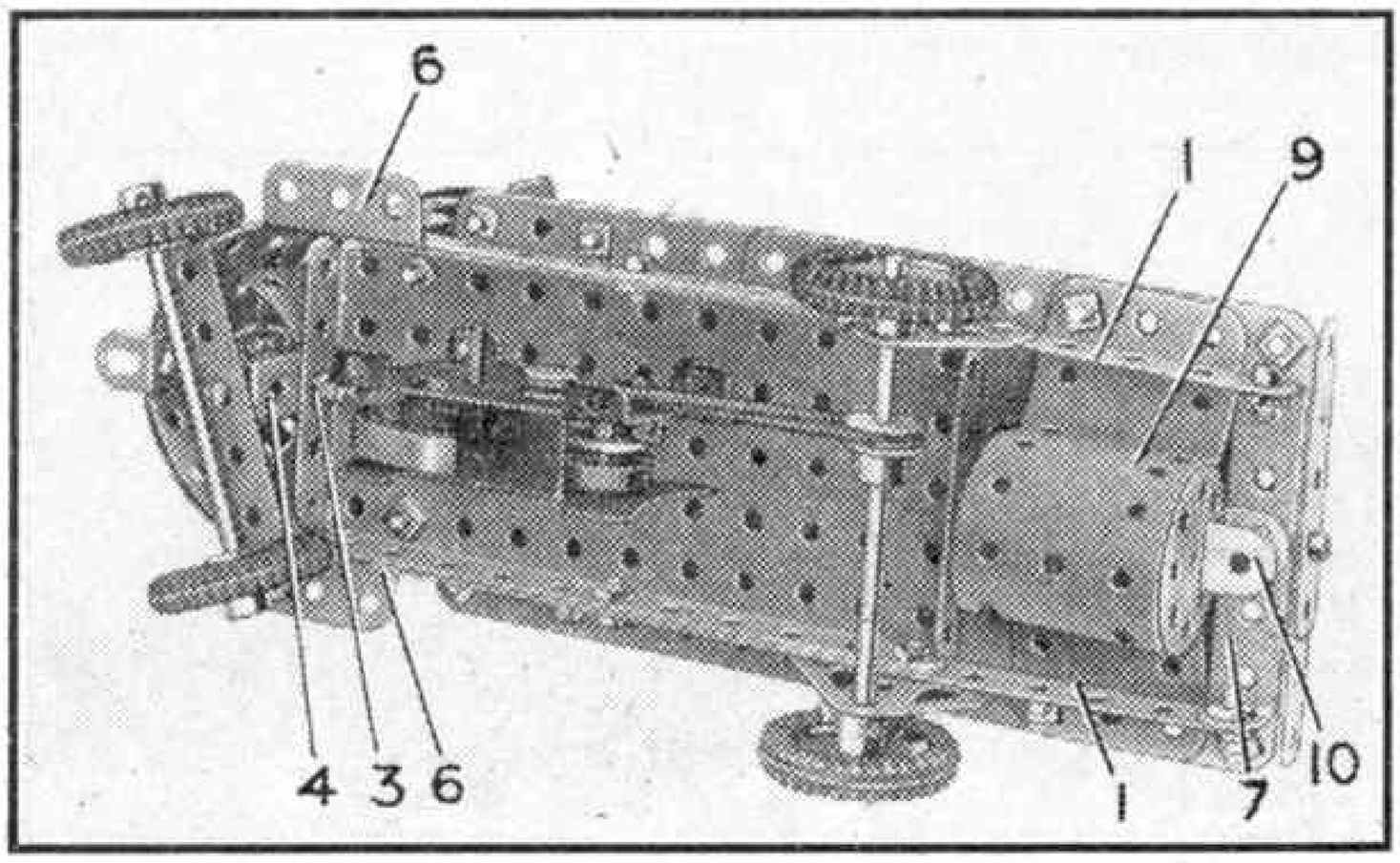


Fig. 2. The steam lorry is driven by a Magic Motor, which is seen in position in this underneath view of the chassis.

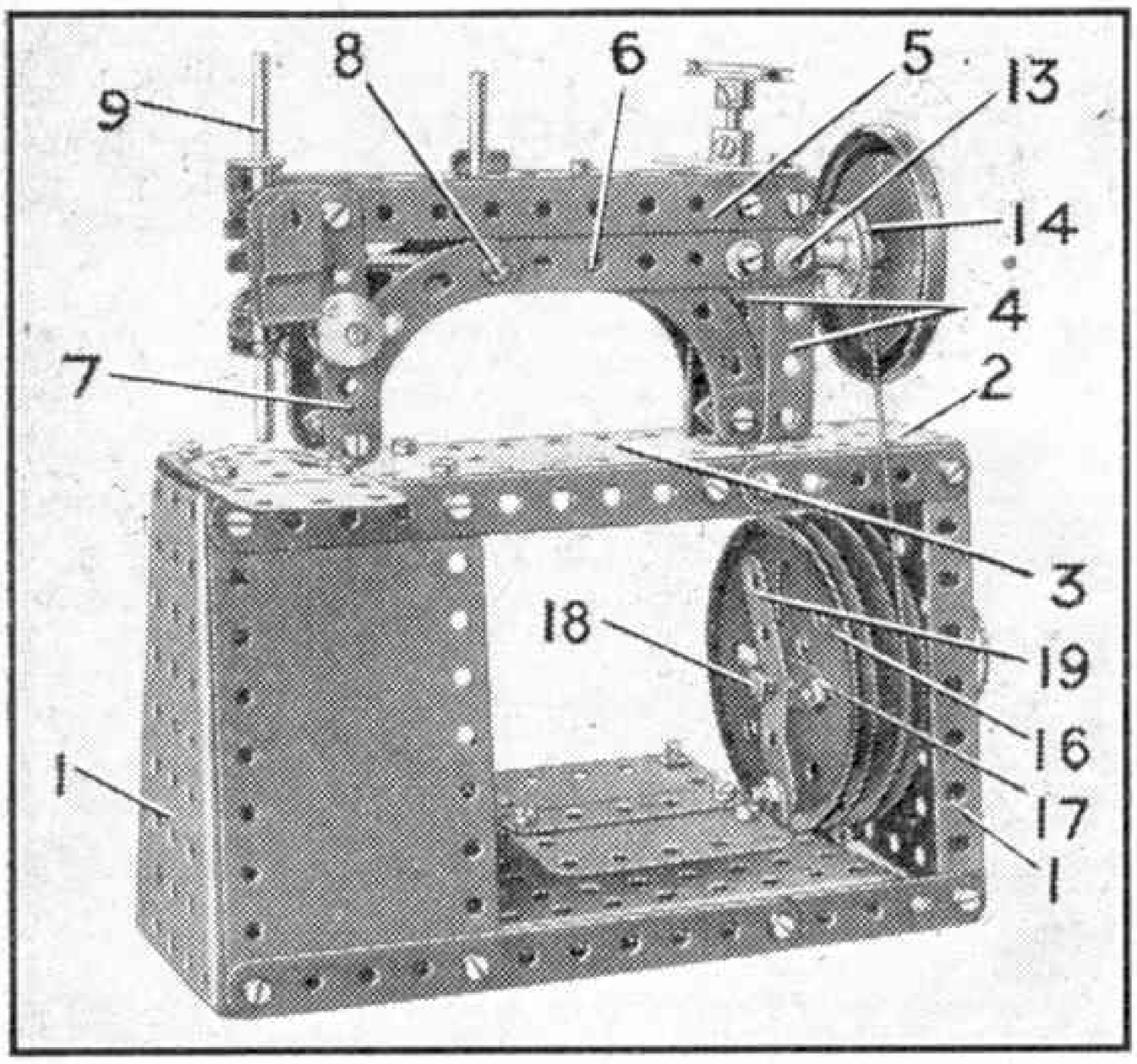


Fig. 3. This sewing machine is a really interesting model for Outfit No. 4. It contains an ingenious cam-like mechanism that operates the needle spindle realistically.

chassis as shown, and is connected to the ½″ Pulley by a crossed Driving Band.

The platform consists of two 5½″ × 2½″ and two 4½″ × 2½″ Flexible Plates bolted together to form a plate measuring 7″ × 3½″, and this is edged by 5½″ and 2½″ Strips. The platform is bolted to the Flanged Plate and also to a 2½″ × ½″ Double Angle Strip 7 fixed between the Strips 1. The loading board 8 consists of two U-Section Curved Plates opened out and bolted to the platform.

The water tank 9 is made from a 5½″ × 1½″ Flexible Plate curved to U-shape and fixed to the platform. The back of the tank is a Wheel Disc fixed to a Double Bracket 10.

Parts required to build model Steam Wagon: 6 of No. 2; 8 of No. 5; 1 of No. 10; 2 of No. 11; 8 of No. 12; 1 of No. 15b; 1 of No. 16; 1 of No. 17; 4 of No. 22; 1 of No. 23a; 1 of No. 24; 6 of No. 35; 41 of No. 37; 2 of No. 37a; 4 of No. 38; 2 of No. 48a; 1 of No. 52; 1 of No. 111c; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 4 of No. 142c; 1 of No. 186a; 2 of No. 188; 2 of No. 189; 1 of No. 190; 2 of No. 191; 2 of No. 192; 2 of No. 199; 1 of No. 214; 2 of No. 215; 1 of No. 219; 1 *Magic* Motor.

Sewing Machine

The attractive treadle-operated sewing machine shown in Figs. 3 and 4 is built from parts in a No. 4 Outfit, and one of its features is a neat cam action used for operating the needle.

The base is made from a 5½″ × 2½″ Flanged Plate fitted on each side with two 5½″ Strips that overlap the Flanged Plate by nine holes. A Flanged Sector Plate 1 is bolted between the Strips at each end.

The top of the sewing table is a 2½″ × 1½″ Flanged Plate 2 bolted to one of the Flanged Sector Plates, and a 5½″ × 1½″ Flexible Plate 3. The Flexible Plate is fixed to a 1½″ × ½″ Double Angle Strip bolted to the Flanged Sector Plate at the other end, and it is edged on each side by a 5½″ Strip and a 2½″ Strip. These Strips are attached to the Flexible Plate by Angle Brackets.

Two 2½″ × ½″ Double Angle Strips 4 on each side are bolted to the Flanged Plate 2 to form an upright, and 5½″ Strips 5 are fixed to them as shown. A 3½″ Strip 6 on each side is also bolted to the Double Angle Strips and is connected by a Curved Strip to a 2½″ Strip 7 attached at the sewing head to the Strip 5. A Double Bracket is fixed between the Strips 6 by the Bolts 8.

The needle shaft is represented by a 3½″ Rod 9 mounted in an Angle Bracket bolted to one of the Strips 5 and in a second Angle Bracket fixed to a Fishplate 10. Rod (*Continued on page 430*)

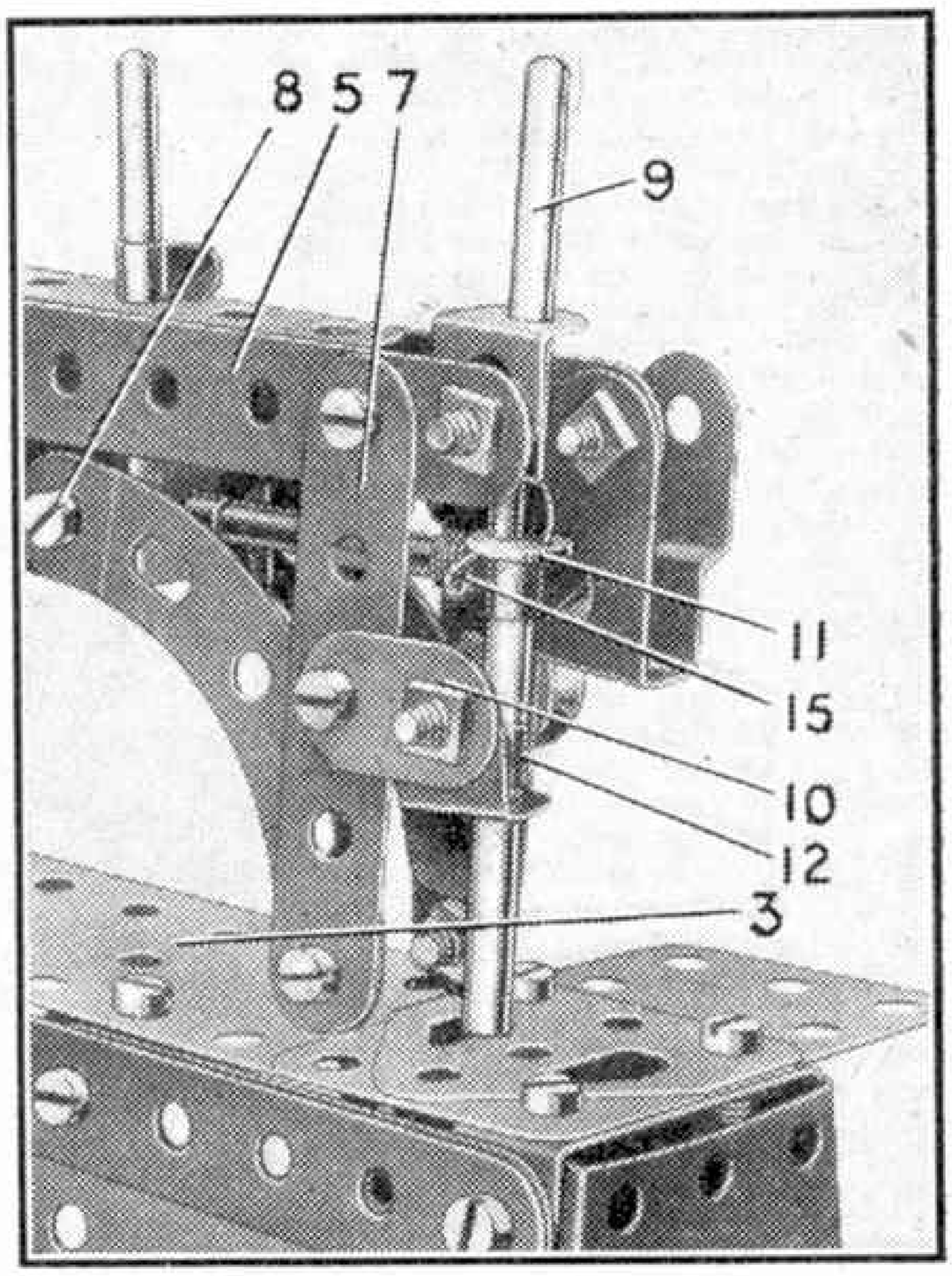


Fig. 4. A close-up of the needle head. The needle spindle is moved up and down by the lug of a Cord Anchoring Spring engaging a Washer on the spindle.

Club and Branch News

WITH THE SECRETARY

THREE POINTS TO REMEMBER NOW

Enthusiasm for Model-building, and for the operation of Hornby or Hornby-Dublo Trains, is at its highest point at the beginning of the first of the two Winter Sessions, and this must be directed in such a way as to give the best results.

Three points should be given special attention at this time of the year. The first is the programme to be pursued throughout the coming indoor season. This must be of a kind to keep the members busy with interesting occupations, and it must appeal to every member. The only one way of ensuring this is to settle its details by vote at a general meeting, at which officials and ordinary members alike can express opinions and make suggestions.

The second point to be considered is membership. New blood is absolutely necessary if a Club or Branch is to be continuously successful, so a recruiting campaign of some kind should be started at once. The best recruiting agent is a satisfied member, and every member should be urged to bring at least one of his friends into the organisation. The newcomers must be genuine enthusiasts, and it is a good plan to allow them to be present at one or two meetings before they are asked to decide whether to join or not, or before they are accepted.

The third important point that I have in mind is the necessity for keeping in touch with Headquarters. Sometimes a Club goes along so happily that the need for this is overlooked. This is a distinct loss, for often I am able to make suggestions for new programme features, or to give advice that may resolve some irritating little difficulty. Apart from this, the existence of a Club or Branch that does not send in regular reports is liable to be overlooked by enthusiastic "*M.M.*" readers, because their proceedings are not mentioned on this page. Valuable recruits can easily be missed in this way.

The remedy is an easy one. If the Secretary himself is too busy to compile reports he should appoint an assistant with no other duty than to keep notes of Club or Branch events and send a summary of these to me every month.

CLUB NOTES

STROUD (GLOS.) M.C.—Outdoor events have included cricket matches and a visit to the Fielding and Platt Engineering Works. A dredger was awarded first prize in a general Model-building Contest, and a further contest has been held with agricultural machines as the subject. A special prize has been presented by Mr. W. E. Jackson for award to the best model-builder each year. Club roll: 40. *Secretary:* W. Jackson, 234, Stroud Road, Gloucester.

NEWTOWN SCHOOL (WATERFORD) M.C.—The Annual Exhibition was a great success. A "Safety First" display was arranged, in which excellent use was made of Dinky Toys and Supertoys, including Road Signs accurately placed. Club roll: 17. *Secretary:* D. S. Gibson, Newtown School, Waterford, Eire.

ONLLWYN Y.M.C.A. M.C.—This Club has made an excellent start, with a good programme. The model-building standard is high. This was demonstrated by the success of the Secretary, whose working model of a crane was awarded first prize in the Welsh Y.M.C.A. Eisteddfod, held at Barry. Club roll: 16. *Secretary:* Lynn Watkins, Y.M.C.A., Onllwyn, Nr. Neath, Glam.

SKEGBY M.C.—During the summer Cricket and other outdoor pursuits were enjoyed by members. A Locomotive Spotters' Scrapbook has been provided by Mr. K. H. Selby, Leader; to this members contribute photographs or drawings from various sources. Club roll: 9. *Secretary:* J. D. Selby, "Saudon," 11, Westdale Avenue, Skegby, Mansfield, Notts.

BRANCH NEWS

LOUGHTON—General repairs have been carried out and the track is in excellent condition. Colour light signalling has been extended, and an automatic signal has been installed at one point. Members learned a great deal from an enjoyable visit to the Old Oak Common locomotive depot of the Western Region. *Secretary:* F. G. H. King, 12, Shelley Grove, Loughton.

NEW ROAD (SOUTH CHINGFORD)—Recent meetings have been most enjoyable. Members have been busy planning and constructing a layout for Chingford Day, at which they gave a successful display. In addition displays in the Branch Room attracted many visitors. Members also enjoyed a special Visit to the Romney, Hythe and Dymchurch Railway. *Secretary:* Mr. K. White, 136, Westward Road, South Chingford, London E.4.

RAMSEY C.P. SCHOOL—The track has been extended and now has a total length of 350 ft. The Branch Room has been decorated with posters, and presents an attractive appearance. *Secretary:* Peter Haddon, 2, Newtown Road, Ramsey, Hunts.

Members of the Mile End (Portsmouth) M.C. with the road layout on view at a recent Exhibition. Under the direction of Mr. A. J. Nicholson, Leader, a very fine display was made of Meccano models, and both Hornby and Hornby-Dublo layouts were operated with great success. Other attractions included a working exhibit by The Radio Section of the Club, and a safety demonstration film show given by Portsmouth City Police. More than 300 visitors enjoyed the Exhibition.

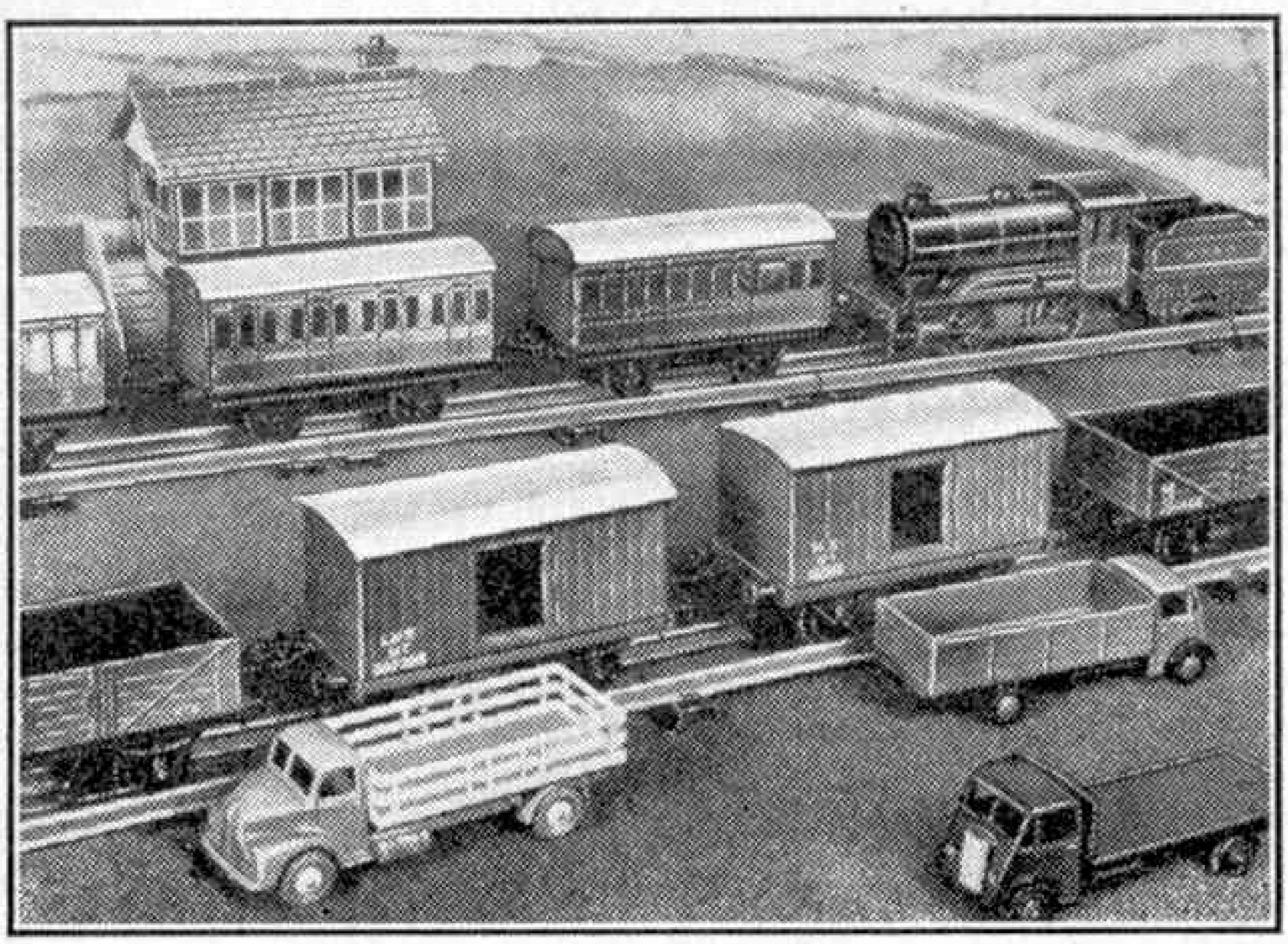
Fun in the Hornby Goods Siding

IN miniature practice a great deal of attention is usually given to the running of passenger trains. This is quite easy to understand, as the prominence given to the principal expresses on our railways is naturally reflected in the running of trains in miniature. As we have often pointed out, however, the working of goods trains and goods yards and sidings can be among the most fascinating features of a miniature railway system.

The track layout depends of course on the space and the rails available, but whatever the exact plan, the yard is sure to be used, partly for the storage of wagons, but also for loading and unloading purposes and the shunting and marshalling of trains. A goods yard on any railway is generally a busy place, and in many large yards shunting engines are at work throughout the 24 hours of the day and night. In smaller yards an engine may only put in a certain number of hours, while in the small yards attached to country stations perhaps the only shunting is that performed by the engine of the daily pick-up goods train, which may bring a few wagons of coal for the local merchants and one or two wagons and vans of miscellaneous goods for traders in the district.

On a larger Hornby railway there can be one or more goods yards, according to the rails available, and quite interesting shunting operations can be carried out continuously, the Hornby No. 101 tank locomotive being an ideal engine for this work. A goods train arriving at the yard can be backed into a reception siding and the engine detached. Then the shunting engine can take over, while the engine which brought the train can proceed to the shed or to another duty.

Alternatively, the No. 101 tank, or whatever engine is available according to the size of the layout, could work the goods yards in turn, carrying on the shunting operations required by traffic conditions.

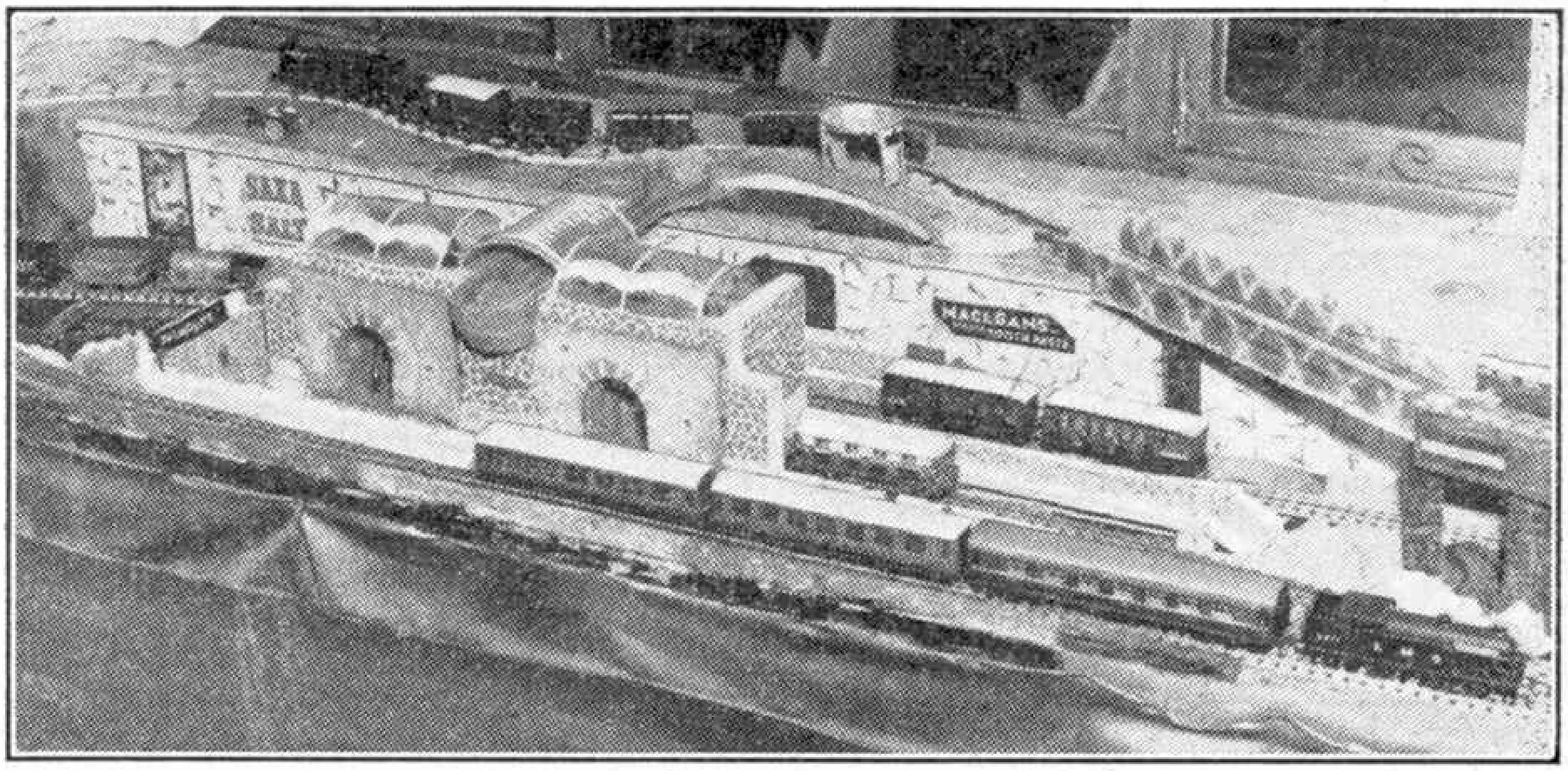


A typical goods yard scene on a Hornby layout, in which good use is made of Dinky Toys Road Vehicles. In the background an engine is hauling empty coaches.

As mentioned previously, the engine of the pick-up goods train usually performs shunting operations at each yard as it proceeds on its way along the track, picking up and detaching wagons for the various stations which it serves.

Apart from shunting operations, plenty of fun can be had in loading and unloading the wagons and vans. The Hornby range includes open wagons, which can be used for a variety of loads made from all sorts of odds and ends. Only light objects should be used of course. There are also vans with sliding doors, and it is good fun to unload the contents of these into Meccano Dinky Toys lorries, which will add an air of activity to any goods yard. The illustration on this page shows the Dinky Toys "Leyland Comet" and "Guy" wagons drawn up beside a couple of No. 1 goods vans ready to receive their loads.

It may not be possible for many owners of Hornby trains to build extensive sidings and yards at present, owing to the scarcity of equipment. But even the provision of one siding can add greatly to the interest of any Hornby railway system, as it can form a goods depot, passenger station, or just a place for stabling rolling stock when it is out of use.



A scene on the Hornby-Dublo layout of Captain Maxwell Walker, Braunstone, showing the two levels of track. The station and various engineering features of the railway were made at home by the owner. Photograph by courtesy of the "Leicester Illustrated Chronicle."

A Two-Level Layout in Hornby-Dublo

READERS will remember the Gauge 0 outdoor miniature railway system of Captain Maxwell Walker, of Braunstone, that was described in the *"M.M."* in February 1949. Since then Captain Walker has added an indoor system to his equipment and this except for the buildings and one or two items consists of Hornby-Dublo railway material and stock.

The new railway is arranged on raised shelving in a bedroom so that the amount of space available for the track is somewhat restricted. In spite of this an effective layout scheme has been developed. Two tracks are laid out on two different levels with Hornby-Dublo standard equipment. The lower level track is electric but the upper level, which has a through running connection with the lower one, incorporates pre-war Hornby-Dublo clockwork track and appropriate stock.

The complete system has been arranged to represent a railway of local character and for this reason only tank locomotives are employed. The passenger rolling stock, and the goods stock, is of mixed character. Thus the passenger train shown in the picture above includes one L.M.S. and two L.N.E.R. vehicles. There are a few home-built coaches modelled on various old types although, as the owner of the system remarks, it may not be long before these end their days as huts.

The photograph on this page shows the two through stations on the railway, one serving the low level line and the other the upper track. The low level station is the more important and has three platforms and a bay. Its buildings are lofty as is often the case with older railway station structures. The high level station is connected by a footbridge with the low level one.

The high level track follows a winding course as does many a real branch line, the reason in this particular instance being the need to make the best use of the rail sections to hand. Bridges and other lineside features are found on the system and simply made scenic effects give the railway an appropriate setting.

Remarkably varied materials have been pressed into use in the arranging of the lineside. Oddments of leather make up the rocky wall of a cutting approaching a tunnel, felt cuttings wired together and coloured have produced hedging, while matchsticks and thread have been made up into fencing. Coloured fabrics stretched over shaped falsework represent embankments and added depth is given to the whole scene by the use of a background strip painted on special paper. This background does not appear in the photograph above, as the railway at this point is in front of the window.

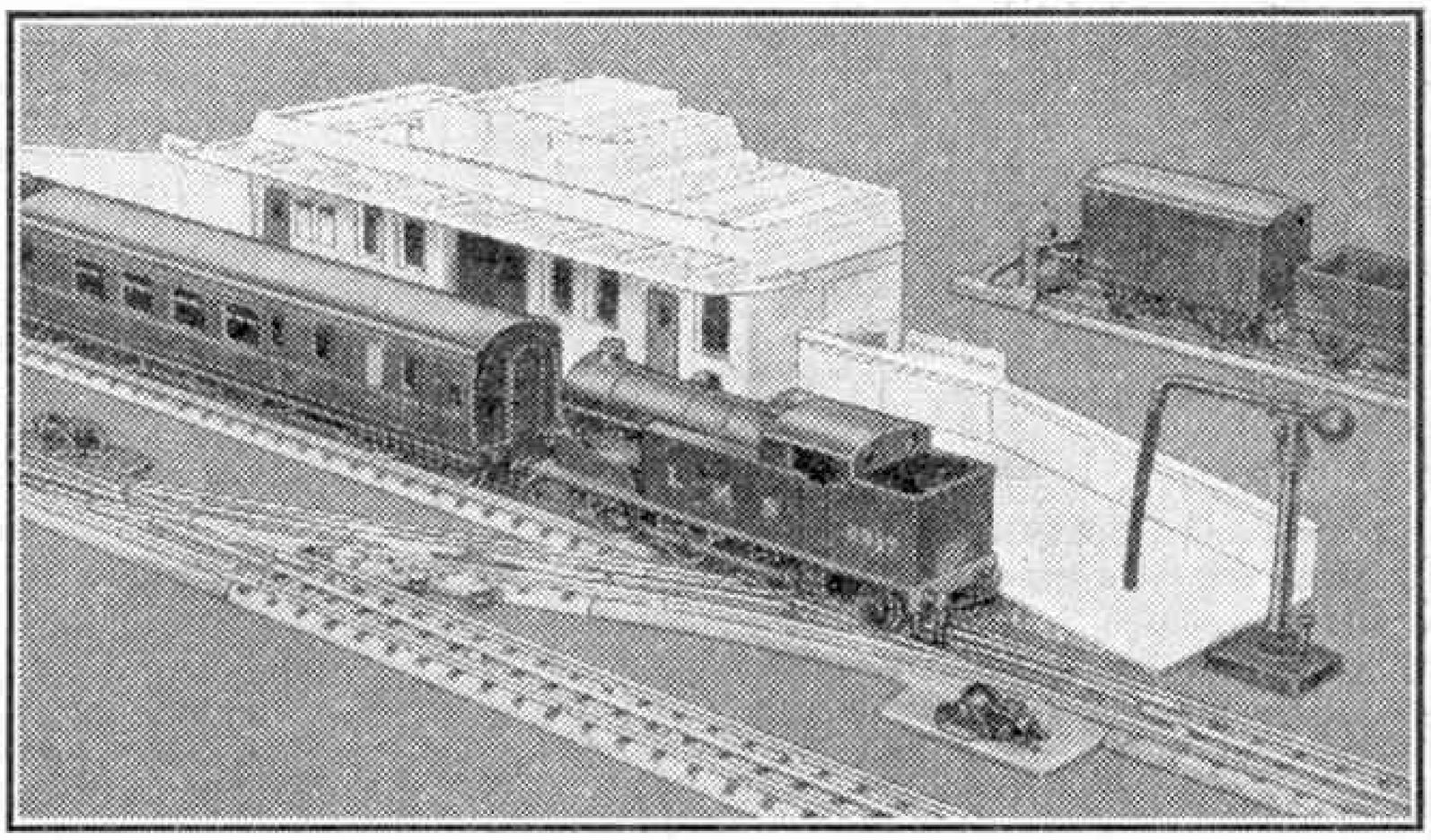
Hornby-Dublo Suburban Trains

LAST month we made suggestions for the running of Hornby-Dublo goods trains, particularly those of a local character. This month let us talk about local passenger or suburban trains.

A layout for this type of work can be quite simple. In fact, stopping passenger trains can be run with success when the track is just a plain oval. It is naturally an improvement if a siding is available for the storage of the coaches when not in use. If this is provided with an Uncoupling Rail so much the better, and those with more material can go on to develop more detailed and elaborate layouts, including crossover points and loop lines for running round purposes.

Motive power of course must be considered. The Hornby-Dublo Tank locomotive is just as suitable for local passenger work as it is for goods train operations of the type that we spoke about last month. It is indeed an ideal "general-purpose" engine, and on most Dublo layouts full use is made of it.

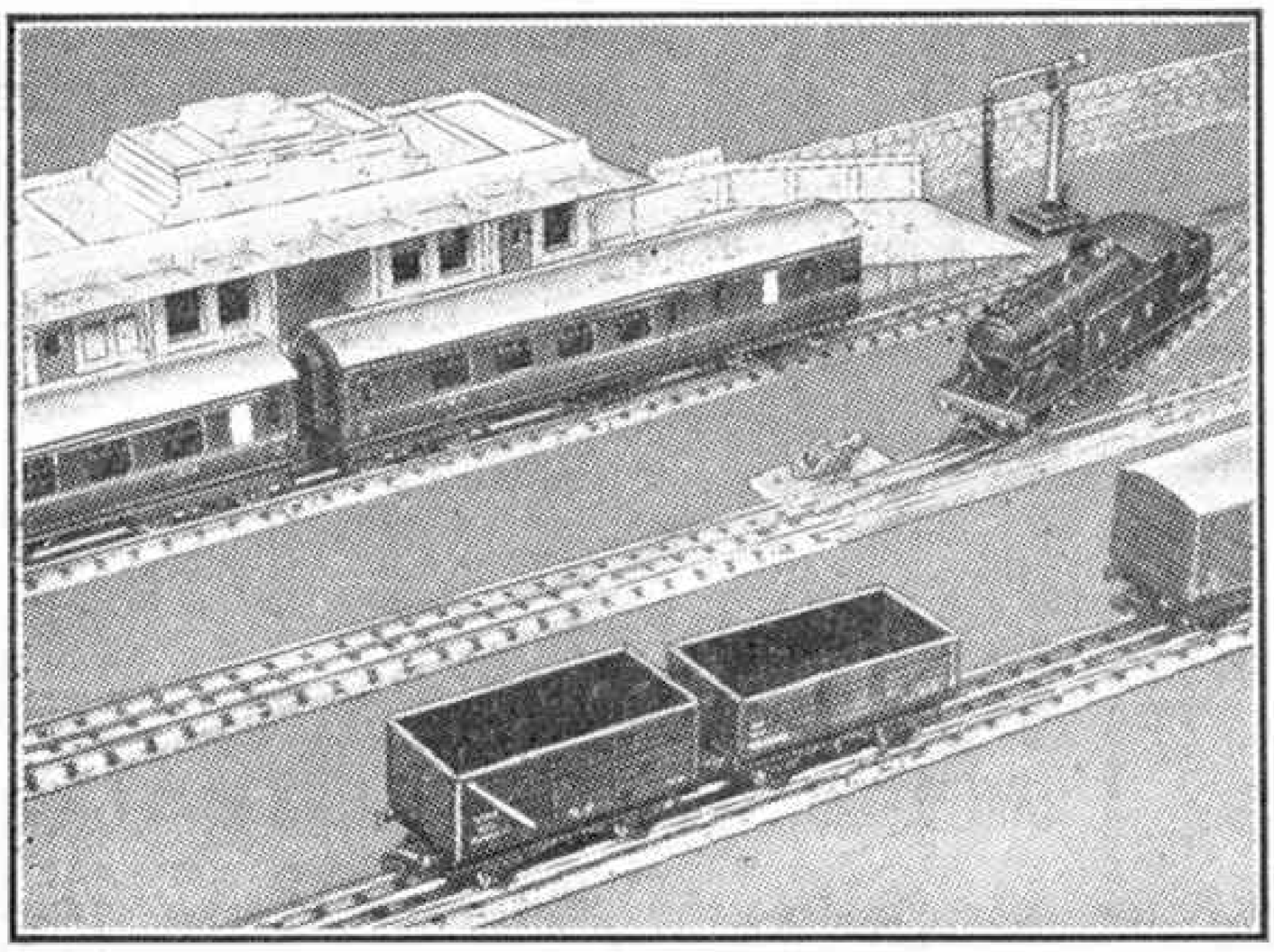
Coaching stock for local passenger trains need not present any real problem. Although the standard Hornby-Dublo Coaches are intended for main line work they can well be used for local trains, and in fact many Hornby-Dublo owners do use them in this way. Compartment type non-corridor rolling stock has yet to make its appearance in the Hornby-Dublo System.



A local train arrives at a Hornby-Dublo Station. The engine is a Dublo 0-6-2 tank, which is ideal for this type of work.

As the make-up of suburban trains does not vary much, our two or three-coach miniature local can stand in the siding ready made up. The tank engine couples up and works the train to the station where our passenger service starts. If there is only one station on our railway the train can stop there each time it makes a circuit of the track. Alternatively longer runs can be made by missing one or two such stops now and again according to the type of service we are representing.

Additional vehicles such as a horse box or a goods van can be attached to our local train as required. This should not be done during any "rush period" service, but it will be interesting to attach a van for some supposedly regular traffic to one or more particular trains in each Hornby-Dublo "day."



Running round operations in progress. The engine is passing through the points from the loop line ready to be coupled up to the train shown.

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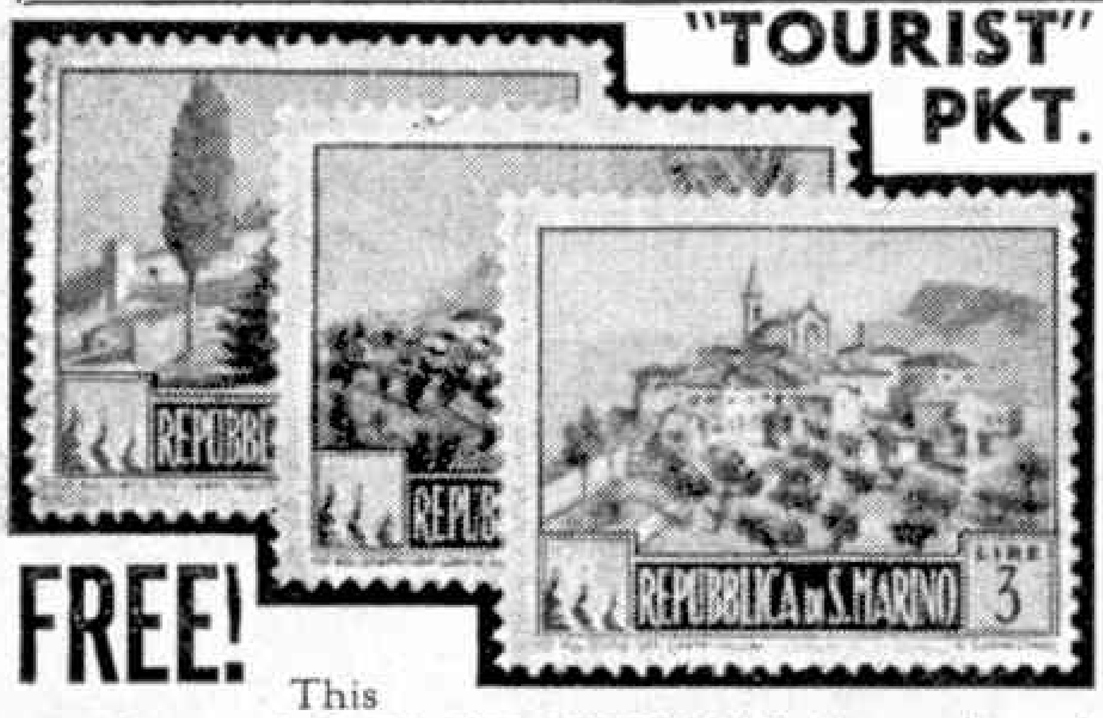

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For other Stamp Advertisements see page 426.

Stamp Collecting

More Captain Cook Stamps

By F. Riley, B.Sc.

DURING his first great voyage in the South Seas Captain Cook explored New Zealand and landed on the east coast of Australia. Shortly after the completion of this voyage he sailed again from this country in H.M.S. "*Resolution*," this time to search for a great continent that many people believed to exist in the southern Pacific Ocean. He sailed south until he reached the impassable ice barrier of the frozen ocean, but after covering thousands of miles he abandoned the search.

The rest of the voyage was devoted to further exploration in the Pacific Ocean itself. In its course he fixed the position of Easter Island and the Friendly Islands, and made discoveries in the Society Islands and elsewhere. One of these discoveries was the island of Niue, from which the stamps illustrated on this page have come.

Cook reached the island on 20th June 1774 and found the inhabitants so unfriendly that to their home he gave the name of Savage Island. Whatever the explanation of his reception this name is certainly not deserved, for the islanders have since proved peaceful and friendly. There are over 4,000 of them, and these with a handful of Europeans make up the total population of the island, which covers about 100 sq miles.

Because of Cook's discovery of the island, and in view of its position as part of the Cook Islands group, under the control of New Zealand, it was to be expected that the great explorer would figure on its stamps when these came to be issued. In 1902 overprinted stamps of New Zealand were introduced on the island, following its annexation by that Dominion in the previous year; and from then until the appearance of the pictorial issue of July 1950 the stamps of New Zealand or of the Cook Islands served the postal services of Niue.

To adapt them for this service New Zealand stamps were overprinted with the name of the island, and those of the Cook Islands had their inscriptions altered to include the name. Among the stamps selected were several reminding collectors of the association of Niue with Captain Cook. Thus the two Cook Islands pictorial issues of 1920 and 1932, in each of which there were two Cook stamps, were among those from the Islands that were made suitable

by the inclusion of the name Niue in the inscription. The New Zealand Cook connection was not so direct, for it took the form of one stamp only, the overprinted ½d. value of the 1898 issue, reproducing a picture of Mount Cook.

Now Niue has its own stamps, a pictorial set of 10 values issued on 3rd July of last year. The lowest value shows an excellent map of the island, which is more informative than such stamp maps usually are, and unlike the stamp map of Mauritius issued last year, appears to have its latitude and longitude correct. The remaining nine stamps of the issue are pictorials, and form a very fine set, printed in recess by Bradbury Wilkinson and Co. Ltd.

Of these stamps the 1d. value is the only one directly concerned with Captain Cook. It is in brown and green, and the picture on it shows H.M.S. "*Resolution*" at Opaahi. It was in this famous ship that Cook completed his second voyage of exploration in the Pacific, in the course of which he covered a distance equal to three times the circuit of the Earth. The "*Resolution*" of course was a sailing vessel, of only 462 tons, and on this voyage she was accompanied by the "*Adventure*," of 336 tons.

The seat of government of Niue is Alofi, on the west coast, and the 2d. value shows he landing stage there, while on the 6d. value is a picture of Alofi Bay with a trading vessel at anchor. Typical occupations of the natives provide the subjects for the 3d., 9d. and 2/- values. The first of these shows a hut with palm trees in the background; in the second an islander fishing with a pronged spear is seen; and the third illustrates a banana plantation. Bananas seem to be the chief product of the island for export.

Niue is an island of coral limestone, an atoll that has been raised in a series of upheavals. One result of this is that on it there are many interesting caves and rock formations formed by rain percolating through it on its way to the sea, and the set illustrates some of these. For instance on the 4d. value is an attractive picture of a rock arch at Hikutavake, at the north west corner of the island; and on the 1/- value, with the effect intensified by the use of the colours purple and black, is a picture of a cave at Makefu, which is on the coast some miles north of Alofi Bay. The 3/- value shows an even more striking scene, a great chasm at Matapa.

In his first two voyages Cook practically re-mapped the South Seas. During his third and last voyage he re-discovered the Sandwich Islands and sailed northward until he reached the ice of the Arctic Ocean, beyond Bering Strait. Then he sailed back to the Sandwich Islands, where he was killed by the inhabitants, who were short of food and were dismayed when the visitors showed signs of remaining for the winter,

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For other Stamp Advertisements see page 424.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

WITH so many beautiful stamps issued all the time—which rules out the feeble emanations of our own Post Office—it is difficult to choose those most worthy of comment. Preference must be given to those that belong to the popular countries, which means that the stamps of our own Commonwealth cannot be overlooked, and it is fortunate that they vie in design and general appearance with stamps issued by foreign countries.

One of these was issued on 19th June by St. Lucia. This stamp has a modest face value of 6d., and it commemorates the reconstruction of Castries, the capital, which was destroyed by fire in June 1948. The apt design depicts a phœnix rising from the burning buildings of the city. It has been described as more suitable for a poster than a stamp, but if so, and it is compared with our 2½d. Festival stamp, it is pretty certain that 99 people our of 100 would say, let us have poster stamps.

And now for a very different stamp. This is one of a very long set issued recently by Mozambique. For a personal reason no set could be of more interest to the writer of these notes. Each of the 24 stamps in it shows a fish that is to be found off the coast of this Portuguese colony, and here is the reason why one collector at least will take care to buy the whole set, with its 24 different fishes, even though it will be rather costly.

When the first World war broke out the British Government commandeered a number of German whalers that had their headquarters at Durban. They were well-found little vessels, and just the thing for patrolling the East African coast, for they drew little water relatively and could go quite a distance up the rivers. At the time the German commander von Lettow was leading our troops a merry dance in that part of the world. One of the whalers, the "*Childers*," happened to be at Port Amelia, after running down from Zanzibar, when there was news that the Germans were perhaps lying at the other side of the headland to the south of the port. So the vessel was detailed to creep round before daylight and let fly at any enemy camp that might be found.

The writer, one of the very small crew, was there at action stations, with the others, wondering what on earth we would be able to do with our pop-guns—a six-pounder was our main armament—if von Lettow did happen to be there. But every man kept his thoughts to himself though, as we found out later, we were all thinking the same thing. We eased quietly along around the headland and as we swung in towards the shore there was a horrible bump, and a scrape, and we were on the coral. We were lucky that the German commander was not even in the district, otherwise we could have done little against the odds that would have ranged against us.

Anyhow, there we were piled up on the coral beach—or perhaps it should be strand—and as each wave rolled in we were lifted up, to be let down on the coral again with a bang as it passed on. Orders were given to lighten ship, and soon shells and anything else of any weight were jettisoned, but this was of no avail. We were high and dry.

The next job was to get the shells back on board again, but by then there was a new complication, for a crowd of blacks arrived on the scene. There they stood, gesticulating with their spears, and those of us who had never seen such things before looked askance at their weapons as we clambered out of the ship, now almost on her side. But we need not have worried, for apparently their purpose was only spearing fish, not frightened young Englishmen. We were bartering in no time, and soon we had enough fresh fish to last a week in exchange for a couple of pounds of candles.

We had to wait until another naval vessel came along to try and tow us off. During that time we would go outboard and lie stretched out for hours when the tide had gone out, gazing down into the pools left on the coral. There indeed was another world, for among those lovely coral growths, were tiny wonderfully coloured tropical fish, such as one sees in an aquarium. Some of the pools would be not more than a couple of yards or so across, but those little gleaming jewels would be swimming about in groups, in and out of the purple, green and pink coral. An unforgettable picture.

But this will never do; what about stamps? Our third illustration takes us to a country a long way from Portuguese East Africa. It is a stamp issued by Uruguay to commemorate the victory of its team in Brazil last year in the 4th International Football Championship. This is not the first set that Uruguay has been able to issue to mark such a triumph, for on two previous occasions this tiny country licked the world at football in the Olympic Games. A wonderful record.

Actually they play very good football in South America. There is not much to choose between Argentine, Brazil and Uruguay, but somehow when the occasion calls for it Uruguay seems to pull out that little extra that brings home the bacon. England did very badly in the same championship, in which our team was beaten by the weakest in the lot, that from the U.S.A. On the stamp just note the Union Jack on the footballer's stocking.

A final illustration shows a beautiful stamp from Monaco, one of a set to commemorate the Holy Year.

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Build These New Words

While day dreaming on a hot afternoon during the summer we found ourselves making up weird words that suggested fearsome animals and strange actions. One of these new words was GANNETTLE, made up from the names of a well-known sea bird and a stinging plant, a combination that suggests something that flies through the air by the seaside and stings any holiday makers it touches!

This in turn suggested an interesting competition, in which readers might be asked to find strange words of this kind, so clues to 12 of these are given in the panel on this page. In each case the first clue points to the name of a bird, but the second clue may lead to any kind of word. An essential point is that the last three letters of the first part must be the same as the first three letters of the second part, as in making up the word GANNETTLE from GANNET and NETTLE.

As usual, this competition will be divided into two sections, for Home and Overseas readers respectively. In each of these there will be prizes of 21/–, 15/– and 10/6 for the best solutions in order of merit. If there is a tie for any prize the neatness and originality of the entries concerned will be taken into account, and consolation prizes will be awarded for deserving efforts that just fall short of prize-winning standard.

Entries should be addressed *"Word Building Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing Dates: Home Section, 31st October; Overseas Section, 31st January 1952.

CLUE TO FIRST PART	CLUE TO SECOND PART
1. One was named Jim Crow.	A waster of time.
2. Long winged stormy sea bird.	Might be uncle or cousin.
3. Talks, sings and whistles.	Minute water animal.
4. A Southern Ocean flyer.	Describes a skeleton.
5. Sounds out of breath.	Another bird after all.
6. Does it really boast?	Anyway this is noisy.
7. Likes trees and telegraph poles.	Is it trying to get at this?
8. King of the hunting birds.	Stream of light.
9. Noted for its bill.	Treats fish, fruit or meat.
10. Chatterer met everywhere.	Apparently secures an uproar.
11. One of Jenny's family.	A curdling affair.
12. A fork-tailed flyer.	With a gloomy outlook.

On the Railway Track

Even when there are no locomotives, coaches or wagons to be seen on it, the railway track is of absorbing interest for those who are keen observers. These look for features of the track itself, with its many different types of points and crossings, and of the signals, which also provide interesting variety.

The track scene therefore is a suitable foundation for a contest. Below are 10 questions, each of which is concerned with some railway feature that should be well known to enthusiasts, and prizes are offered to those who give the best answers.

1. **What is a fixed signal?**
2. **What is known as a "doll?"**
3. **What are facing point locks?**
4. **What is a slip crossing?**
5. **What is a fixed "distant?"**
6. **What is a bell crank?**
7. **What is a movable diamond?**
8. **What is meant by "switching out the box?"**
9. **What is a finial?**
10. **What is a repeater?**

Competitors should remember that it is not the number of words that counts in a reply, but the amount of correct information that is given. They should therefore be as concise as possible.

There will be the usual sections in this contest, for Home and Overseas readers respectively, and the prizes to be awarded in each section for the best entries in order of merit are 21/–, 15/– and 10/6.

Entries should be addressed *"September Track Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing Dates: Home Section, 31st October; Overseas Section, 31st January 1952.

September Photographic Contest

The ninth of our 1951 series of photographic contests is a general one in which we invite readers to submit prints of any subject. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed *"September Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* The closing dates in this contest are as follows: Home Section, 29th September Overseas Section, 31st December.

Competition Results and Solutions

HOME

APRIL 1951 DOUBLETS CONTEST

1st Prize: J. Rouse, Doncaster. 2nd Prize: D. Lloyd, Belfast. 3rd Prize: B. R. Dunn, Sandwich. Consolation Prizes: A. Hocking, Exeter; A. L. King, Coulsdon; J. D. P. Hall, Reading.

APRIL 1951 LOCOMOTIVE CONTEST

1st Prize: K. Jennings, Preston. 2nd Prize: J. C. O'Dare, South Shields. 3rd Prize: D. S. Jepson, Llangollen. Consolation Prizes: J. E. Cox, London W.12; B. Winterbottom, Manchester 8; R. A. Green, Blackpool.

MAY 1951 PHOTOGRAPHIC CONTEST

1st Prize. Section A: W. Forsch, Stoke-on-Trent; Section B: A. Hobbs, Dartmouth. 2nd Prize, Section A: C. L. H. Hobbs, Dartmouth; Section B: D. K. Elliot, Belfast. 3rd Prize, Section A: J. Flux, Stonehaven; Section B: B. Stokes, Warboys. Consolation Prizes: K. Campbell, Newcastle-on-Tyne; Mrs. I. Hardwick, Burnham-on-Sea; J. G. Crawford, Darlington; C. E. Wrayford, Newton Abbot; C. H. Thomas, Swaythling; D. M. Morgan, New Malden; R. Knight, Stoke Mandeville; T. Whitmarsh, London N.W.4; W. H. Wilkinson, Whitefield.

OVERSEAS

NOVEMBER 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: T. P. Mansergh, Remuera, N.Z.; Section B: T. Grey, Auckland, N.Z. 2nd Prize, Section A: L. D. Goldblatt, Randfontein, S. Africa; Section B: W. P. Gabriel, Dunedin N.Z. 3rd Prize: Section A: C. O. D. Ekwensi, Yaba, Nigeria; Section B: N. Mackintosh, Adelaide, Australia. Consolation Prizes: I. C. Dyer, Bombay, India; W. Jamieson, Wairarapa, N.Z.; G. Urquhart, Hamilton, N.Z.; S. Z. Alley, Calcutta, India; J. G. Taylor, Lower Hutt, N.Z.

DECEMBER 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: P. R. Turner, Brussels Belgium; Section B: K. Watson Berne, Switzerland. 2nd Prize, Section A: J. R. P Waterman, Little Rock, U.S.A.; Section B: A. S. Harrison, St. Julians, Malta G.C. 3rd Prize, Section A: Miss A. F. Neilson, Pleasant Point, N.Z.; Section B: B. Smith, Maynooth, Eire. Consolation Prizes, Section A: D. Bir, Calcutta, India; K. W. Anderson, Wanganui, N.Z.; Section B: D. Harding, R.A.F., Ismailia, Egypt; O. Rudden, Dublin, Eire; A. Pearson, Bulawayo, S. Rhodesia.

DECEMBER 1950 ADVERTISEMENT CONTEST

1st Prize: F. Jensen, Copenhagen, Denmark. 2nd Prize: A. P. Cornhill, Alexandria, Egypt. 3rd Prize: R. J. Boland, St. Lukes, Eire. Consolation Prizes: S. J. C. Johnson, Freetown, Sierra Leone; A. Newbald, Norfolk Island; P. V. Hughes, Cunderdin, Australia; L. P. Cox, Lisburn, Portugal; C. Matlock, Berne, Switzerland.

DECEMBER 1950 AIRCRAFT SQUARE CONTEST

1st Prize: T. J. Murray, Perth, Australia. 2nd Prize: N. Jones, Dublin, Eire. 3rd Prize: V. J. Carvalho, Bombay, India. Consolation Prizes: W. M. Robinson, Auckland, N.Z.; C. Smyth, Southampton, Bermuda.

JANUARY 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: B. E. Bennett, Hanover, Germany; Section B: P. Cook, Hopetown, S. Africa. 2nd Prize, Section A: C. W. Tynan, Dieppe, France; Section B: A. J. Wright, Puri, India. 3rd Prize, Section A: F. Kempster, Blackrock, Eire; Section B: S. Wallace, Barrie, Canada. Consolation Prizes: H. Ekwensi, Minna, Nigeria; B. Poynton, Blackrock Eire; G. Tulloch, Nairobi, Kenya; E. Thomas, Nashville, U.S.A.

SOLUTIONS

SEPTEMBER 1950 HIDDEN PROVERBS CONTEST

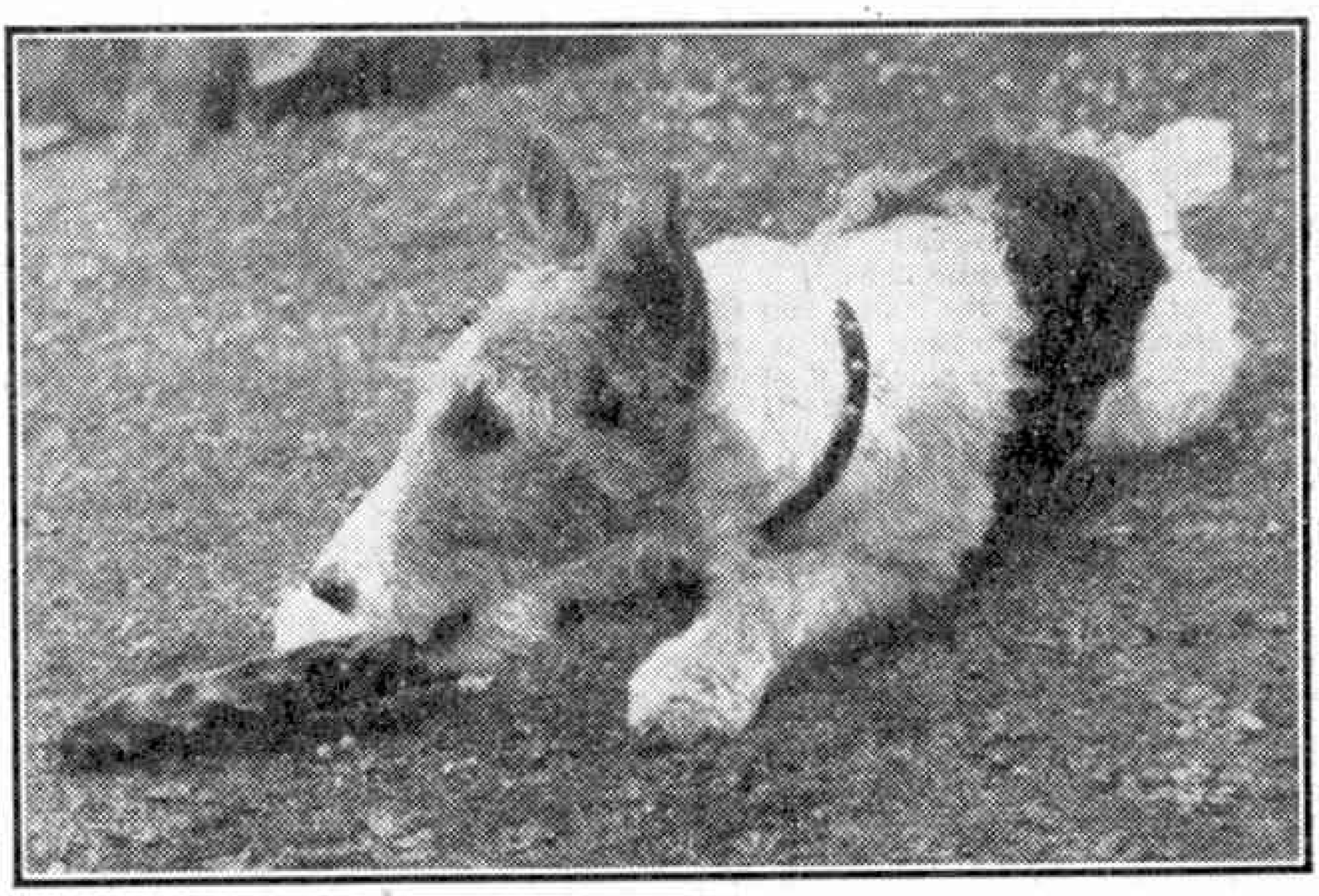
1. Still waters run deep. 2. Spare the rod spoil the child. 3. There's no place like home.

OCTOBER 1950 WAGON PARTS CONTEST

1. Door fastening. 2. Buffer. 3. Label clip. 4. Brake safety loop. 5. Vacuum cylinder. 6. Brake hanger. 7. Brake lever. 8. Axle box. 9. Laminated spring. 10. Brake chain and pin. 11. Vacuum brake pipe. 12. End stanchions. 13. Door runner. 14. Ventilating louvres. 15. Gutter.

NOVEMBER 1950 LOCOMOTIVE NAMES CONTEST

1. "Isambard Kingdom Brunel." 5069. 4–6–0 "Castle" class. WR. 2. "Blue Peter." 60532. 4–6–2 A2 class. E. & N.E.R. 3. "Spitfire" 5071. 4–6–0 "Castle" class. W.R. 4. "Canadian Pacific." 35005. 4–6–2. "Merchant Navy" class. S.R. 5. "Lynton." 34038. 4–6–2 "West Country" class. S.R. 6. "Brighton." 30915. 4–4–0 "Schools" class. S.R. 7. "Royal Engineer." 46109. 4–6–0 "Royal Scot" class. L.M.R. 8. "Atlas." 45737. 4–6–0 "Jubilee" class. L.M.R. 9. "Neptune." 45687. 4–6–0 "Jubilee" class. L.M.R. 10. "Colorado." 60094. 4–6–2 "A.3" class. E. & N.E.R.



Very aptly entitled "No Meat on This," the above photograph entered by A. Hobbs, Dartmouth, in the May Photographic Contest, Section B, was awarded 1st Prize.

The French Aero Show—(*Continued from page 404*)

mechanical drive; instead it uses a small 220 h.p. Turbomeca "Artouste" jet to drive a compressor, which pushes compressed air through the hollow rotor blades to small burner units at their tips. There, fuel is mixed with the compressed air and ignited, and the resultant thrust turns the rotor. Nor is the exhaust from the "Artouste" wasted, for it is carried through the fuselage to the tail, where it is used to supplement the rudder for directional control.

The French have stolen a march on the rest of the world with these miniature jet-engines. The Fouga company, for example, used a Turbomeca "Piméné" to power their "Sylphe," the world's first jet light 'plane. They now plan to use two of the larger

The Gipsy. This excellent wayside picture by John G. Crawford, of Darlington, was awarded a Consolation Prize in Section A of the May 1951 "M.M." Photographic Contest.

"Marbore" units to power a training and light attack aeroplane of similar general layout, while the S.I.P.A. Company have built a most attractive side-by-side, two-seat, twin-boomed jet trainer around a single Turbomeca "Palas."

Most ingenious of the piston-engined light 'planes at the *Salon* was the Hurel Dubois HD10, built to prove the efficiency of M. Hurel's revolutionary rapier-like wing design. Despite its frightening appearance, it flies beautifully, and the French Government have already ordered two twin-engined transports on the same lines..

To sum up both the *Salon* and the flying display—one gained the impression that if the ability of French designers and the terrific skill of French pilots could be combined with a really effective production policy from their Government, France might well regain her position in the forefront of world aviation development. As it is, the policy appears to be lacking, and without it all these promising aircraft may well end up merely as superb "might-have-beens."

New Meccano Models—(*Continued from page 419*)

9 is fitted with a Washer 11 held between two Spring Clips, and a third Spring Clip 12 prevents it from turning.

The driving shaft is a 4" Rod joined to a 2" Rod by a Rod Connector, and it is mounted in a Double Bracket held by the Bolts 13 and in the Double Bracket fixed by Bolts 8 already mentioned. This shaft carries a 1" Pulley 14, and is fitted with a Cord Anchoring Spring 15. The lug of the Cord Anchoring Spring engages the Washer 11 to form a simple cam to operate the needle.

Pulley 14 is connected by a Cord belt to a 3" Pulley fixed on a 2" Rod. The Rod is mounted in one of the Flanged Sector Plates and in a Reversed Angle Bracket bolted to the Sector Plate, and is fitted with a second 3" Pulley 16. A Bolt is fixed in one of the slotted holes of the Pulley 16 by a nut, and a Fishplate 17 is then locked tightly on the Bolt by a second nut. In the free hole of the Fishplate, a ⅜" Bolt 18 is fixed, and a 2½" Strip 19 is pivoted on the Bolt as shown and held in place by lock-nuts. This arrangement forms a crank having a stroke of approximately ½".

The treadle is formed by a 2½" × 2½" Flexible Plate fitted with a 2½" × ½" Double Angle Strip. A 3½" Rod is passed through the lugs of the Double Angle Strip, and also through the lugs of a second Double Angle Strip bolted to the base. The Rod is held in place by Spring Clips, and the Strip 19 is lock-nutted to an Angle Bracket fixed to the treadle.

The model is completed by adding the attachments shown in the illustrations to represent machine fittings.

Parts required to build model Sewing Machine: 8 of No. 2; 2 of No. 3; 7 of No. 9; 2 of No. 10; 2 of No. 11; 6 of No. 12; 1 of No. 15b; 2 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 18b; 2 of No. 19b; 3 of No. 22; 1 of No. 23; 1 of No. 24; 8 of No. 35; 56 of No. 37; 8 of No. 37a; 8 of No. 38; 1 of No. 40; 1 of No. 44; 1 of No. 48; 6 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 4 of No. 90a; 3 of No. 111c; 1 of No. 125; 1 of No. 126a; 1 of No. 176; 1 of No. 187; 1 of No. 188; 1 of No. 189; 1 of No. 190; 2 of No. 191; 1 of No. 213.

Meccano Projection Microscope—

(*Continued from page 415*)

so that all unwanted light is cut out, but as the lamphouse will get hot it must be placed away from the apparatus and the light reflected upward by a mirror set at an angle of 45 deg. The mirror is adjusted by handwheel H. In this case the condenser may be between the lamp and the mirror. The aim should be to get a small brilliant circle of light about ⅛" to ¼" diameter on the object.

The microscope lens, which in effect is now the camera lens, having been focused correctly, a sharp, clear and evenly illuminated picture should appear on the ground glass screen. Too much glare on the screen will spoil the definition, and so the light should be controlled by "stopping down" with the aid of either an iris diaphragm, if one is available, or a piece of card, in which a small circle is cut, placed immediately beneath the object. Experiment with holes of different diameters will soon show the best size for the purpose. Start off with a hole ⅛" diameter and test the definition of the projected image each time. This stopping down helps greatly in obtaining a really sharp clear image.

The method of using the apparatus is as follows. After selecting the object to be photographed, wipe the slide free from dust and then place the object on the stage. The light should be adjusted so that it illuminates the object brightly. With the room lights extinguished the image should then be focused sharply on the ground glass screen, using the convenience of the mechanical stage to select the portion of the object required to be photographed. When this is satisfactory, switch off the light. Slip the photographic plate or film in its holder in the place of the ground glass screen, first making sure that the sensitised surface will be in exactly the same position as the ground glass screen. Slip out the protective slide on the plate holder and all is ready.

The actual exposure is carried out simply by switching on the light source of the instrument.

Fireside Fun

"Do you think radio and television will ever take the place of the newspaper?"

"Of course not. You can't swat flies with a television set, can you?"

* * * *

"Is Battling Butler, the boxer, in?"

"He's still in bed. Never gets up before ten!"

* * * *

"My big brother always reminds me of a piece of furniture."

"Do you mean he's just a piece of wood?"

"No, silly. He's a tall-boy."

* * * *

"Why weren't you at work yesterday?"

"This certificate from the doctor explains it, sir. He said I couldn't work yesterday."

"That's no good. I could give you a certificate that you never could work."

* * * *

"What on earth are you wheeling that barrow upside down for?"

"Oh, I've tried that way, but somebody was always putting clay or bricks into it. This is a lot easier."

* * * *

"Haven't you threaded it yet, Freddie?"

"No, Mum. Every time I get the cotton near the eye, it blinks!"

BRAIN TEASERS

HOW INDEED?

"Think of a number with three figures, Billy, and then turn it back to front."

"Sounds a bit silly, but I've done it."

"Right. Now subtract the smaller number from the greater."

"Yes. What next? Does this go on for ever?"

"No. We've finished when you tell me the last figure in the difference."

"Oh, that's 6."

"Then the difference is 396."

"Right, but how did you know?"

* * * *

SQUARE THIS UP

A small square window, measuring 12 in. each way, has to be boarded up, and the only piece of wood available measures 16 in. × 9 in. How would you cut the wood into two pieces that together would just cover the window? S.W.C.

* * * *

"Doesn't it hurt you to see your father hanging on to a strap?"

"Only at home, Mum!"

* * * *

FACE THE MUSIC

Here is an unusual addition sum. It would be very simple if it were not that letters have been substituted for numbers. The latter can be found, however, and to help you are told that A is 6. Now work out the other numbers. But why Face The Music?

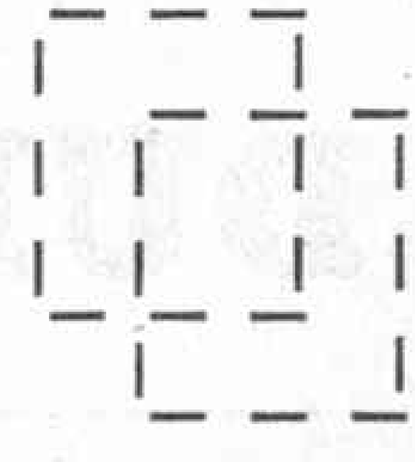
M A K E
O N E
———
T R I C K

SOLUTIONS TO LAST MONTH'S PUZZLES

The seven words to which the clues of our first puzzle lead are MAGNETO, REPLANT, ENCLASP, PROCEED, RECLAIM, DESCENT and MOROCCO.

The national event of our second puzzle of course is the FESTIVAL OF BRITAIN. The words giving clues to the letters are VINE, SLAVE, FORTRESS and STATION. The letters numbered 10, 16 and 11 spell FIB.

The total number of squares in the diagram of our third puzzle is 30. The accompanying diagram shows the two squares left when 16 matches are taken away.



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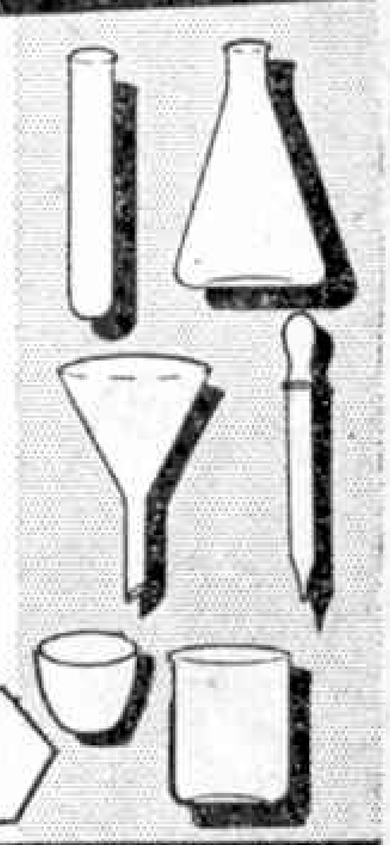

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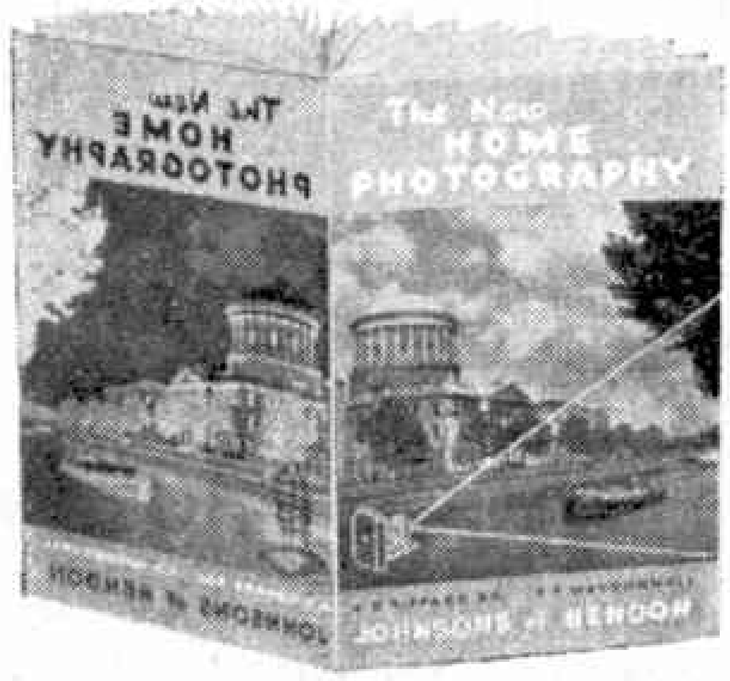

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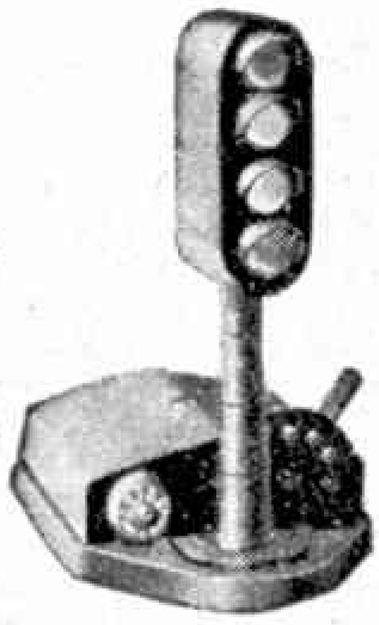

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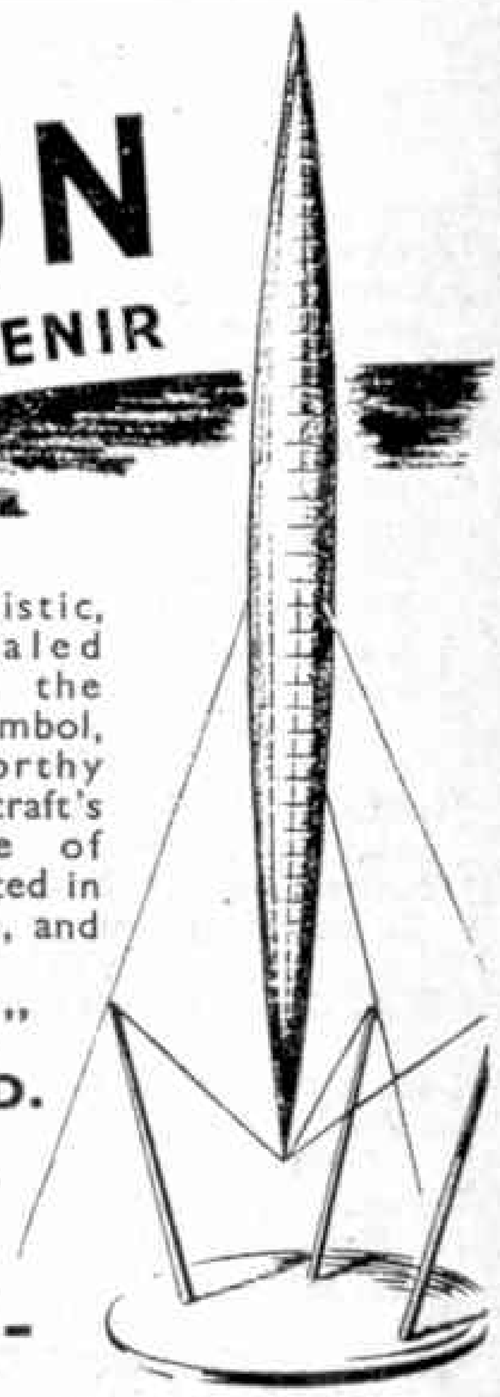

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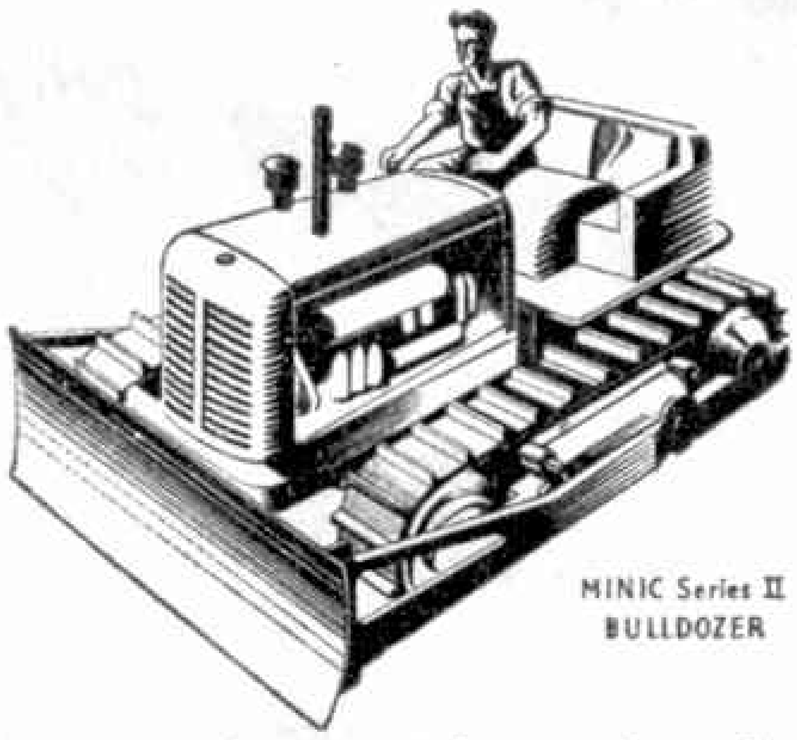

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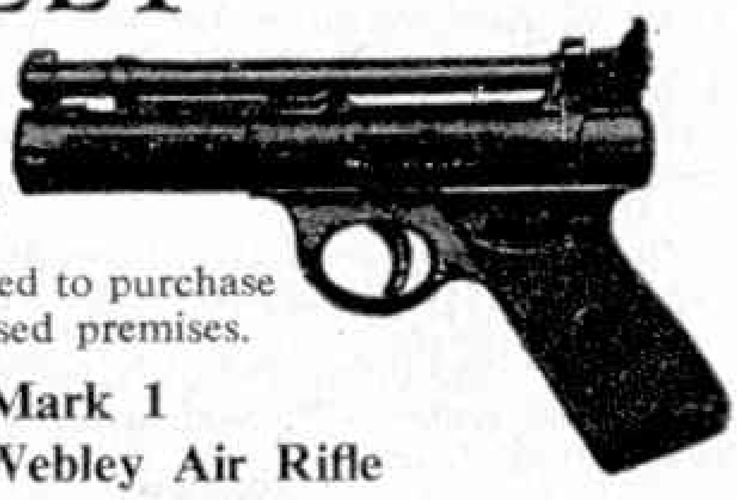

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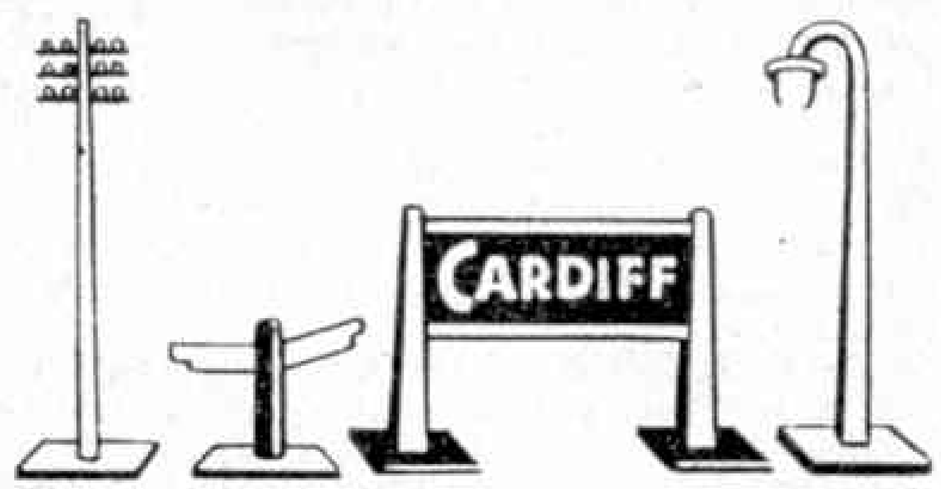

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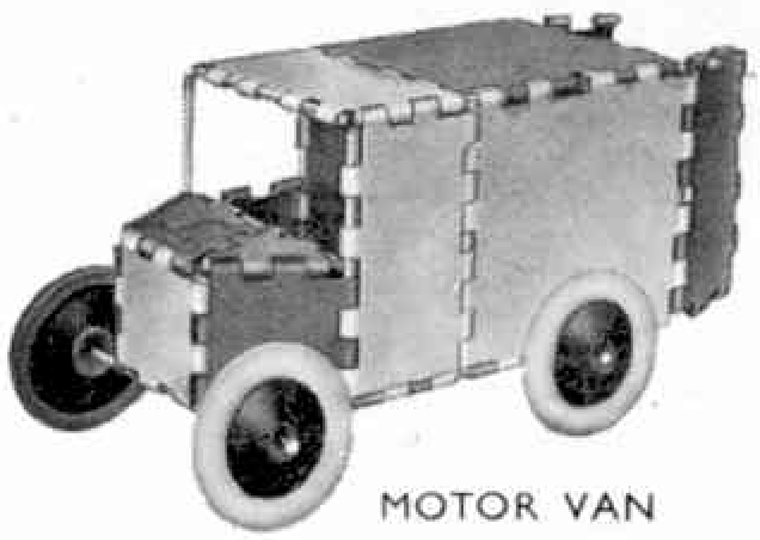

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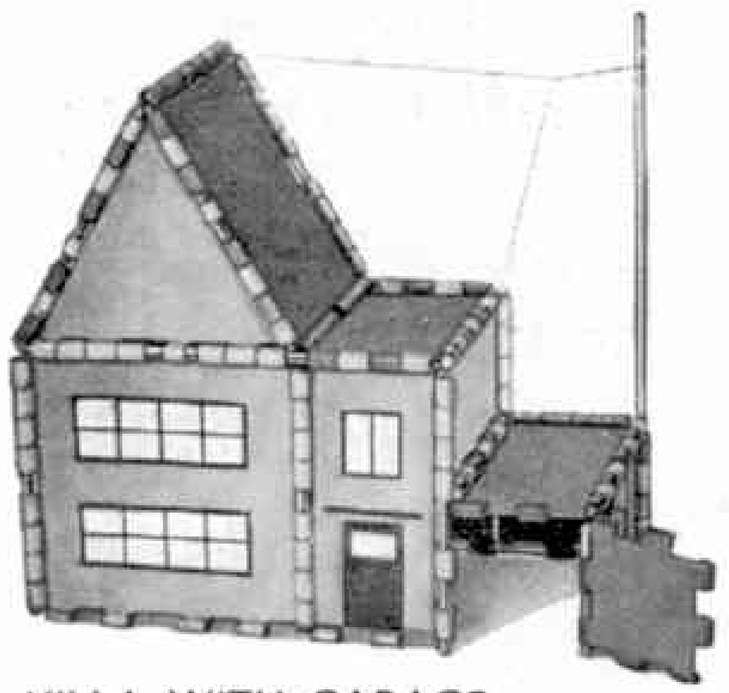

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